CHINA RAILWAY DESIGN CORPORATION
КОСТЕ РАЦИНА 16б, 11000 БЕОГРАД
САОБРАЋАЈНИ ИНСТИТУТ ЦИП д.о.о.
11000 БЕОГРАД, НЕМАЊИНА 6/IV
тел: 011/3618-134, факс: 011/3618-324,
web site: www.sicip.co.rs

2/1.1.3.1.1 НАСЛОВНА СТРАНА

2/1. ПРОЈЕКАТ КОНСТРУКЦИЈА

Инвеститор:	„Инфраструктура Железнице Србије“ а.д. Немањина 6/4, Београд
Наручилац:	Конзорцијум фирми: China Railway International Corporation Ltd. China Communication Construction Company Ltd. (CCCC)
Објекат:	Пруга Београд - Суботица државна граница (Келебија), **ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА),** у Новом Саду, Кисачу, Степановићеву, Змајеву, Врбасу, Ловћенцу, Малом Иђошу, Бачкој Тополи, Жеднику, Наумовићеву и Суботици, К.О. Нови Сад I, К.О. Нови Сад IV, К.О. Кисач, К.О. Руменка, К.О. Степановићево, К.О. Ченеј, К.О. Бачко Добро Поље, К.О. Врбас, К.О. Врбас - град, К.О. Змајево, К.О. Куцура, К.О. Ловћенац, К.О. Мали Иђош, К.О. Фекетић, К.О. Бачка Топола, К.О. Бачка Топола - Град, К.О. Мали Београд, К.О. Биково, К.О. Доњи Град, К.О. Жедник, К.О. Нови Град, К.О. Палић, К.О. Стари Град, на катастарским парцелама према списку приложеном у Главној свесци
Врста техничке документације:	**ПГД-** Пројекат за грађевинску дозволу
Назив и ознака дела пројекта:	**ПРОЈЕКАТ КОНСТРУКЦИЈА -** **2/1.1.3.1 Пројекат галерије на км 78+377.03**
За грађење / извођење радова:	Нова градња
Пројектант:	China Railway Design Corporation Serbia Ogranak Beograd Косте Рацина 16б 11000 Београд, Србија
Одговорно лице пројектанта:	Генерални директор: 耿欣 (Генг Ксин)
Потпис:	XIN GENG Digitally signed by XIN GENG Date: 2021.08.03 09:39:36 +02'00'
Одговорни пројектант:	Зоран Луковић, дипл. грађ. инж. Лиценца број: 310 3032 03
Потпис:	ЗОРАН ЛУКОВИЋ 011041396 Sign Digitally signed by ЗОРАН ЛУКОВИЋ 011041396 Sign Date: 2021.07.30 11:59:37 +02'00'
Број дела пројекта:	2020-001-ГС-2/1.1.3.1
Место и датум:	Београд, април 2021.год.

CeS.TRA

ТЕХНИЧКА КОНТРОЛА ПРОЈЕКТА ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ

2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ НА km 78+377.03

Објекта: Пруга Београд - Суботица - државна граница (Келебија), **ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)**, у Новом Саду, Кисачу, Степановићеву, Змајеву, Врбасу, Ловћенцу, Малом Иђошу, Бачкој Тополи, Жеднику, Наумовићеву и Суботици, К.О. Нови Сад I, К.О. Нови Сад IV, К.О. Кисач, К.О. Руменка, К.О. Степановићево, К.О. Ченеј, К.О. Бачко Добро Поље, К.О. Врбас, К.О. Врбас - град, К.О. Змајево, К.О. Куцура, К.О. Ловћенац, К.О. Мали Иђош, К.О. Фекетић, К.О. Бачка Топола, К.О. Бачка Топола - Град, К.О. Мали Београд, К.О. Биково, К.О. Доњи Град, К.О. Жедник, К.О. Нови Град, К.О. Палић, К.О. Стари Град, на катастарским парцелама према списку приложеном у Главној свесци, на основу Закона о планирању и изградњи („Службени гласник РС” бр. 72/09, 81/09 – исправка, 64/10 – одлука УС, 24/11, 121/12, 42/13 – одлука УС, 50/13 – одлука УС, 98/13 – одлука УС, 132/14, 145/14, 83/18, 31/19, 37/19 - др. Закон, 9/20 и 52/21) и одредби Правилника о садржини, начину и поступку израде и начину вршења контроле техничке документације према класи и намени објеката (“Службени гласник РС”, бр. 73/2019), извршена је техничка контрола предметне документације, од стране предузећа CESTRA d.o.o. Београд.

ПРОЈЕКАТ СЕ ПРИХВАТА

Вршилац техничке контроле: CESTRA d.o.o,
Макензијева 57, Београд

Број лиценце: 351-02-03374/2020-09 од 18.03.2021.

Одговорно лице/Заступник: Директор:
Драган Милић, дипл.грађ.инж.

Потпис:

Dragan Milić
Digitally signed by Dragan Milić
Date: 2021.08.04 15:13:58 +02'00'

Вршилац техничке контроле: Драган Милић, дипл.грађ.инж.
Број лиценце: 312 E503 07
Потпис:

Dragan Milić
Digitally signed by Dragan Milić
Date: 2021.08.04 15:13:25 +02'00'

Вршилац техничке контроле: Новак Новаковић, дипл.грађ.инж.
Број лиценце: 310 K201 11
Потпис:

Novak Novaković 387844-27019837 61041
Digitally signed by Novak Novaković 387844-2701983761041
Date: 2021.08.04 11:44:46 +02'00'

Број техничке документације: A10312-61/21

Место и датум: Београд, 2021.

2/1.1.3.1.2 САДРЖАЈ

2/1.1.3.1.1	Насловна страна	
2/1.1.3.1.2	Садржај	
2/1.1.3.1.3	Решење о одређивању одговорног пројектанта	
2/1.1.3.1.4	Изјава одговорног пројектанта	
2/1.1.3.1.5	Текстуална документација	
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Цртежи	Назив цртежа	Размера
2020-001-ГС-2/1.1.3.1.7.Ц01.	Основа	1:100
2020-001-ГС-2/1.1.3.1.7.Ц02.	Основа темеља	1:100
2020-001-ГС-2/1.1.3.1.7.Ц03.	План одводњавања	1:100
2020-001-ГС-2/1.1.3.1.7.Ц04.	Подужни пресек 3-3	1:100
2020-001-ГС-2/1.1.3.1.7.Ц05.	Подужни пресек 4-4	1:100
2020-001-ГС-2/1.1.3.1.7.Ц06.	Попречни пресеци	1:100 1:50

2/1.1.3.1.3 РЕШЕЊЕ О ОДРЕЂИВАЊУ ОДГОВОРНОГ ПРОЈЕКТАНТА

На основу Члана 128, Закона о планирању и изградњи ("Службени гласник РС", бр. 72/09, 81/09-исправка, 64/10- одлука УС, 24/11, 121/12, 42/13-одлука УС, 50/13-одлука УС, 98/13-одлука УС, 132/14, 145/14, 83/2018, 31/2019, 37/2019 - др.закон и 9/2020) и одредби Правилника о садржини, начину и поступку израде и начину вршења контроле техничке документације према класи и намени објеката ("Службени гласник РС", бр. 73/2019) као:

О Д Г О В О Р Н И П Р О Ј Е К Т А Н Т

за израду **ПРОЈЕКТА КОНСТРУКЦИЈА - 2/1.1.3.1 Пројекат галерије на км 78+377.03**, који је део ПГД - Пројекта за грађевинску дозволу за изградњу пруге Београд - Суботица државна граница (Келебија), **ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)**, у Новом Саду, Кисачу, Степановићеву, Змајеву, Врбасу, Ловћенцу, Малом Иђошу, Бачкој Тополи, Жеднику, Наумовићеву и Суботици, К.О. Нови Сад I, К.О. Нови Сад IV, К.О. Кисач, К.О. Руменка, К.О. Степановићево, К.О. Ченеј, К.О. Бачко Добро Поље, К.О. Врбас, К.О. Врбас - град, К.О. Змајево, К.О. Куцура, К.О. Ловћенац, К.О. Мали Иђош, К.О. Фекетић, К.О. Бачка Топола, К.О. Бачка Топола - Град, К.О. Мали Београд, К.О. Биково, К.О. Доњи Град, К.О. Жедник, К.О. Нови Град, К.О. Палић, К.О. Стари Град, на катастарским парцелама према списку приложеном у Главној свесци, одређује се:

Зоран Луковић, дипл.грађ.инж. _____310 3032 03

Пројектант:	CHINA RAILWAY DESIGN CORPORATION SERBIA OGRANAK BEOGRAD, Косте Рацина 16б
Одговорно лице/заступник:	Генерални директор: Генг Ксин, дипл.инж.
	Потпис:
Број техничке документације:	2020-001-ГС-2/1.1.3.1
Место и датум:	Београд, април 2021.год.

2/1.1.3.1.4 ИЗЈАВА ОДГОВОРНОГ ПРОЈЕКТАНТА

Одговорни пројектант пројекта **ПРОЈЕКТА КОНСТРУКЦИЈА - 2/1.1.3.1 Пројекат галерије на км 78+377.03** који је део ПГД - Пројекта за грађевинску дозволу за изградњу пруге Београд - Суботица државна граница (Келебија), **ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)**, у Новом Саду, Кисачу, Степановићеву, Змајеву, Врбасу, Ловћенцу, Малом Иђошу, Бачкој Тополи, Жеднику, Наумовићеву и Суботици, К.О. Нови Сад I, К.О. Нови Сад IV, К.О. Кисач, К.О. Руменка, К.О. Степановићево, К.О. Ченеј, К.О. Бачко Добро Поље, К.О. Врбас, К.О. Врбас - град, К.О. Змајево, К.О. Куцура, К.О. Ловћенац, К.О. Мали Иђош, К.О. Фекетић, К.О. Бачка Топола, К.О. Бачка Топола - Град, К.О. Мали Београд, К.О. Биково, К.О. Доњи Град, К.О. Жедник, К.О. Нови Град, К.О. Палић, К.О. Стари Град, на катастарским парцелама према списку приложеном у Главној свесци:

Зоран Луковић, дипл. грађ.инж.

И З Ј А В Љ У Ј Е М

1. да је пројекат у свему у складу са издатим Локацијским условима:

-бр.ROP-MSGI-28188-LOCH-4/2020, Заводни број: 350-02-00031/2020-14 од 06.04.2020,

-бр.ROP-MSGI-28188-LOCH-4/2020, Заводни број: 350-02-00031/2020-14 од 07.04.2020 - Решење о исправци грешке,

-бр.ROP-MSGI-7141-LOC-1/2020, Заводни број: 350-02-00109/2020-14 од 08.05.2020,

-бр.ROP-MSGI-931-LOC-3/2020, Заводни број: 350-02-00192/2020-14 од 29.05.2020;

2. да је пројекат израђен у складу са Законом о планирању и изградњи, прописима, стандардима и нормативима из области изградње објеката и правилима струке;

3. да је пројекат у свему у складу са начинима за обезбеђење испуњења основних захтева за објекат прописаних елаборатима и студијама.

Одговорни пројектант:	Зоран Луковић, дипл. грађ. инж.
Број лиценце:	310 3032 03
	Потпис:
Број техничке документације:	2020-001-ГС-2/1.1.3.1
Место и датум:	Београд, април 2021.год.

2/1.1.3.1.5 ТЕКСТУАЛНА ДОКУМЕНТАЦИЈА

2/1.1.3.1.5.1 ТЕХНИЧКИ ОПИС

ТЕХНИЧКИ ОПИС

Подлоге за израду главног пројекта галерије су:

- Пројектни задатак
- Главни пројекат трасе пруге
- Геолошко геотехнички елаборат
- Остали релевантни пројекти

Новопројектована галерија налази се на km78+377.03 (по левом колосеку) Пруге Београд - Суботица државна граница (Келебија), Деоница пруге: Нови Сад - Суботица - Државна граница (Келебија).

Укрштај је у близини железничке станице у Новом Саду. Три колосека су на доњем нивоу и један колосек на горњем. Угао укрштаја износи 15°35'15".

Колосеци на доњем нивоу су леви и десни колосек железничке пруге Нови Сад – Суботица. Они се налазе на међусобном растојању од 4.75m. Са десне стране на растојању од 8.00 m налази се први колосек пруге Нови Сад Путничка - Распутница Сајлово (Тител-Сента). Сва три колосека су међусобно паралелна и у правцу. Колосеци испод галерије су хоризонтални са котом ГИШ-а од 80.29mnm целом дужином.

На горњем нивоу је други колосек пруге Нови Сад Путничка - Распутница Сајлово. Траса пруге на галерији је у правцу и у конвексној вертикалној кривини. Теме кривине не налази се на средини галерије.

Средњи део моста за смештај колосека, где је туцаник утегнут између парапета, широк је 4.40m.

Максимална пројектована брзина за колосек на горњем нивоу износи 65 km/h.

ДИСПОЗИЦИЈА

Овим грађевинским пројектом се предвиђа изградња галерије на km78+377.03 по левом колосеку пруге Београд-Суботица државна граница (Келебија). Новопројектована галерија је светлог отвора 11.75m за пролаз двоколосечне пруге, т.ј.

7.00m за пролаз једноколосечне пруге. Минимална висина слободног профила износи 6.50m. Просечна кота терена око галерије износи 79.50mnm. Испред и иза галерије, у правцу доњих колосека налазе се потпорне конструкције које су предмет посебног пројекта.

КОНСТРУКЦИЈА

Пројектована конструкција је галерија од армираног бетона, формирана као двораспонска просторна рамовска конструкција, паралелна са главним колосецима. Она се састоји од коловозне плоче која је ослоњена на зидове и стубове са којима је круто везана. Зидови су непрекидни и масивни у делу насипа. Ван насипа, на слободном делу, плоча је ослоњена на круже стубове.

Рам је у попречном пресеку двораспонски. Већи (леви) распон је предвиђен за двоколоселну главну пругу, а мањи (десни) за десну пругу. Осно растојање главних ослоначких оса износи (12.75+8.00)m.

Просторна конструкција са троугластом базом је предвиђена као део галерије. Пројектована је за кос прелаз горње једноколосечне пруге преко галерије. Једна страна тог троугла је управна на осовину горње пруге. Конструкција је овако обликована да би се пар точкова истовремено налазио на подлози исте крутости.

Елементи галерије су висински и положајно уклопљени у нивелацију и геометрију свих пруга које се укрштају.

Конструкција галерије се састоји од шипова, наглавних греда, зидова и стубова, као и горњих носећих плоча.

Зидови и стубови

Положај зидова и стубова је одређен осама железничких колосека. Осе (Рам2, Рам3 и Рам4) дуж којих су постављени зидови и стубови паралелне су осама колосека испод моста, док су осе (Рам1 и Рам5) у зонама троуглова са пројектованим зидовима паралелне горњем колосеку.

Зидови су дебљине 100cm, док су стубови пречника 80cm.

Конструкција галерије ослоњена је на 53 стуба који су постављени у три осе на међусобном растојању од 3.65m. Субструктуру галерије чине и зидови у укупној дужини од 112m.

Горња плоча

Дужина горње плоче износи 108.53m дуж горњег колосека. Дебљина коловозне плоче изнад двоколосечне пруге износи 95cm, а изнад једноколосечне 70cm.

Шипови и наглавне греде

Наглавне греде димензија 2.00×1.50m налазе се испод свих зидова и стубова. Предвиђено је извођење на истој коти дуж целог објекта. Шипови су у једном реду и прате растер стубова од 3.65m.

Коловозна АБ плоча се изводи хоризонтално. Падови за одводњавање изводе се у неармираном бетону у свему према плану одводњавања датом у графичкој документацији.

По ободу плоче и обострано дуж горњег колосека бетонира се монолитно бетон ревизионих стаза заједно са парапетима, ивичним венцима и каналетама по потреби. По ободу плоче предвиђено је постављање пешачке ограде. На деловима према доњим колосецима врши се и постављање заштитне мреже.

Елементи конструкције чије су димензије измењене у односу на идејни пројекат јесу дебљина коловозне плоче изнад пруге и ширина наглавне греде шипова. Пројектанти контактне мреже инсистирали су да се испод галерије обезбеди већа висина слободног профила. Након спроведеног статичког прорачуна са мањом дебљином плоче добијене су пристојне и уградиве количине арматуре, задовољени критријуми удобности и остали потребни услови при чему контролисане вредности нису биле на границама дозвољених.

За усвојену ужу димензију наглавне греде не постоји неки посебан разлог. Оптерећење се из стубова слива директно у шипове, па греде нису изложене екстремним напрезањима.

ФУНДИРАЊЕ

У горњим слојевима, до дубине од око 7.00-8.00m налази се прашинасти песак смеђе до сиве боје, ситнозрног до средњезрног гранулометријског састава. Материјал има условно повољне геотехничке карактеристике.

Испод овог слоја, до дубине 19.00-28.00m налази се тло бољих фозичко-механичких карактеристика. У питању је песак, сиве боје, ситнозрног до средњезрног гранулометријског састава, засићен водом. Слој се одликује садржајем ситнозрнасте фракције испод 10%, понекад са танким слојевима глине.

Испод овог слоја налазе се слојеви веће носивости, шљунковити пескови, али са њима не рачунамо јер су у великом подужном паду спрам галерије.

СТАТИЧКИ ПРОРАЧУН

Статички прорачун спроведен је у програмском пакету Tower. Моделирана је АБ плоча круто везана за зидна платна и стубове доњег строја. Тло је апроксимирано хоризонталним опругама дуж шипова са одговарајућим крутостима. Анализа

оптерећења и димензионисање је урађено према ЕС нормама. Прорачун свих утицаја и напона је урађен за комбинације оптетрећења према ЕС прописима.

ТЕХНОЛОГИЈА ИЗВОЂЕЊА

Динамика извођења радова биће усаглашена са планом одвијања саобраћаја испод галерије.

Након извођења шипова и бетонирања стубова и зидова приступа се бетонирању коловозне плоче на скели, на лицу места.

Након затрпавања темеља и постизања пројектоване марке бетона, приступа се збијању материјала на навозним рампама. Израду прелазне зоне између конструкције моста и насипа пруге треба извести као што је то дефинисано у графичкој документацији, а у складу са смерницама Richtlinie 836. Извођач је у обавези да слојеве испуне од крупнозрног тла уграђује у слојевима дебљине d≤30cm и контролисано збија. Мора се доказати да уграђени материјал клина задовољава услов да је $D_{pr} \geq 0.98$ и $q_{u,28d} \geq 1.0MPa$ и поред тога се мора побољшати материјалом за везивање (цемент). Енергију збијања тј. механизацију којом ће се извести збијање треба прилагодити тако да не утиче неповољно на конструкцију моста. Такође, предвиђена је и уградња носивог слоја од неармираног бетона класе C12/15. Уграђује се у слоју дебљине 40cm. Водити рачуна да се еластични тепих описан у одељку Завршни радови у континуитету постави и преко мостовске конструкције и преко избетониране прелазне плоче. Пре почетка свих радова на затрпавању и збијању земљаног материјала, делове конструкције које су у додиру са земљом заштитити једним премазом битулита и једним премазом врућег битумена, а пре почетка збијања ове делове заштитити.

При извођењу наглавних греда могуће је обављање ископа и бетонирање испод нивоа подземне воде. Извођач има обавезу да по потреби обезбеди пројекат осигурања ископа челичним талпама, као и пројекат црпљења воде из темељне јаме.

ЗАВРШНИ РАДОВИ

Након завршених свих бетонирања извршити монтажу ограде.

Провођење пружних каблова и осталих водова омогућено је кроз канале са поклопцима који су бетонирани у склопу ревизионе стазе. Водити рачуна да се фиксирање поклопаца на каналетама заптивном водонепропустном масом и заливање суседних

поклопаца трајно еластичним гитом обави након постављања пружних каблова и свих осталих инсталација које су планиране да се поставе у каналетама.

На горњој страни коловозне АБ плоче пројектом је предвиђена хидроизолација на бази метил-метакрилата (ММА-мембрана) са заштитним премазом. Преко овог слоја хидроизолације поставља се неармирани бетон у пројектованом паду за одвод воде са објекта. Преко неармираног бетона за пад поставља се други слој хидроизолације и то ојачане битуменске траке за хидроизолацију бетонских мостова. Уградњу хидроизолација на објекту треба да врши извођач специјализован за овакву врсту радова, а испоручени материјали треба да поседују све потребне Атесте у складу са важећом Законском регулативом према Техничким условима. Извођач је дужан да обезбеди равност површине бетона на коју се наносе хидриозолације, према критеријумима из Техничких листова произвођача хидроизолације. Надзорни орган треба да одобри постигнуту равност подлоге пре почетка наношења хидроизолације.

Предвиђена је заштита хидроизолације мршавим бетоном дебљине 5cm у који се утискује поцинкована рабиц мрежа.

На коловозној плочи, преко хидроизолације, између парапета бетона пешачке стазе поставља се еластични тепих за заштиту од буке и пригушење вибрација. Еластични тепих поставља се у дебљини од 2.5cm. Еластични тепих се у континуитету поставља и испред и иза објекта преко прелазних плоча од неармираног бетона у трупу пруге на дужинама приказаним у графичкој документацији.

Површинска заштита бетона предвиђена је на деловима конструкције који су изложени атмосферским утицајима. Третирају се: бетон ивичног венца и пешачких стаза, бочна страна и доња страна коловозне плоче, лице обалних стубова и сви остали делови бетона који су у експлоатацији у контакту са ваздухом. Потребно је користити површинску заштиту у виду премаза која омогућава ниво заштите захтеване принципима 1, 2 и 3 и одговарајућим методама респективно М1.3, М2.3. и М8.3 према SRPS EN 1504-9. Примењени производ треба нанети у максималној дебљини слоја који омогућава адекватну дифузију водене паре кроз елементе конструкције. Такође треба премазати унутрашњост каналета. Треба изабрати премаз у боји бетона према избору Инвеститора.

На ревизионим стазама врши се премазивање заштитним премазом d=3-3.5 mm, формираног од 4 слоја: епокси прајмер, водоотпорни слој пур смоле, основни премаз пур смоле(полиуретан) са кварц песком (0.5-1 mm) и завршни слој пур смоле.

Квалитет уграђених материјала мора одговарати важећим стандардима и пре уграђивања морају се приложити докази о квалитету материјала без којих не сме почети уградња.

МАТЕРИЈАЛИ

Коловозна плоча са гредама	C 35/45, XC4, XF3, VII, M200	B 500B	a=5cm
Стубови и зидови	C 35/45, XC4, VI	B 500B	a=5cm
Наглавне греде	C30/37	B 500B	a=5cm
Шипови	C30/37	B 500B	a=9cm
Ивични венци и пешачке стазе	C40/50, VIII, XC4, XF4, MS-S2	B 500B	a=3cm
Плоче на пешачким стазама	C40/50, VII, XC4, XF1 , M200	B 500B	a=2,5cm
Прелазне плоче	C12/15		
Бетон за пад	C20/25		
Бетон за заштиту хидроизолације	C16/20		
Подложни бетон	C12/15		
Темељ и облога кегле	C20/25		

Сви бетони су класе H (N-normal cement).

Одговорни пројектант:

Зоран Луковић, дипл.инж.грађ.

Бр. лиценце 310 3032 03

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2/1.1.3.1.6 НУМЕРИЧКА ДОКУМЕНТАЦИЈА

2/1.1.3.1.6.1 ПРЕДМЕР И ПРЕДРАЧУН РАДОВА

ПРОЈЕКАТ ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ
ПРУГА: СУБОТИЦА - ДРЖАВНА ГРАНИЦА (Келебија)
2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

DESIGN FOR BUILDING PERMIT
RAILWAY LINE: BELGRADE - SUBOTICA - STATE BORDER (Kelebia)
2/1.1.3.1 GALLERY DESIGN at km 78+377.03

Бр. поз. No.	Бр.поз. Техн Усл Item in Tech. Conditions	Опис радова	Description	Јед. мере Unit	Количина Quantity	Јед. цена (дин) Unit rate (Din)	Цена (дин) Price (Din)
					A	B	A´B
2/1.1.3.1.1	**02**	**ИЗВОЂЕЊЕ HW ШИПОВА**	**HW PILES**				
2/1.1.3.1.1.1		Извођење HW бушених шипова од бетона C 30/37 У цену радова је укључен сав рад на извођењу, а плаћа се готов шип по m'. Арматура се плаћа посебно. Ø120 cm	Construct HW bored pipes of concrete C 30/37. The price covers all construction work and payment shall be made per each finished pipe, per linear meter. Reinforcement to be paid separately. Ø120cm	m'	1,660.00	50,000.00	83,000,000.00
2/1.1.3.1.1.2		Израда, уградња и монтажа арматуре HW шипова. Плаћа се по kg уграђене арматуре. B 500B	Prepare, position and tie rebars in HW piles. Payment per kg of placed rebars. B 500B	kg	300,234.24	120.00	36,028,108.80
2/1.1.3.1.1.3		Пробно оптерећење шипова, испитивање носивости шипова.	Carry out trial loading of piles to test pile capacity Lump sum payment.	паушално / lump sum			3,570,843.26
		УКУПНО ИЗВОЂЕЊЕ HW ШИПОВА:	**TOTAL FOR HW PILES:**				**122,598,952.06**
2/1.1.3.1.2	**03**	**ЗЕМЉАНИ РАДОВИ**	**EARTHWORKS**				
2/1.1.3.1.2.1		Ископ темеља у материјалу I и II категорије, са свом потебном подградом и транспортом ископаног материјала до 5 km. Плаћа се по m^3 ископаног материјала - на дубини 0-2 m - на дубини 2-4 m - на дубини 4-6 m	Excavate foundations in soil cat. I & II, place necessary timbering and haul excavated earth to 5 km distance. Payment per m^3 of excavated material - 0-2 m by depth - 2-4 m by depth - 4-6 m by depth	m^3 m^3 m^3	5,036.37 0.00 0.00	890.00 1,200.00 1,350.00	4,482,369.30 0.00 0.00
2/1.1.3.1.2.2		Ископ ровова и канала, ширине мање од 1.5m и дубине мање од 2m. Плаћа се по m^3 ископаног материјала	Excavate trenches and canals, less than 1.5 m wide and less than 2 m deep. Payment per m^3 of excavated material.	m^3	28.89	1,290.00	37,268.10
2/1.1.3.1.2.3		Додатак за копање темеља при црпљењу в оде од 30 lit/min do 120 lit/min. Плаћа се по m^3 ископаног материјала	Extra for excavating foundations and pumping water in the quantity of 30 lit/min to 120 lit/min. Payment per m^3 of excavated material	m^3	0.00	400.00	0.00

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2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

DESIGN FOR BUILDING PERMIT
RAILWAY LINE: BELGRADE - SUBOTICA - STATE BORDER (Kelebia)
2/1.1.3.1 GALLERY DESIGN at km 78+377.03

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					A	B	A´B
2/1.1.3.1.2.4		Радови на побијању Larsen талпи, подграђи вању и разупирању ради осигурања пропуст а, и/или темеља и темељних јама при ископ у као и осигурања при даљем извођењу нов опројектованог објекта при одвијању саобра ћаја на истом. Обрачун укључује сав материјал, алат, мех анизацију, транспорт и рад.	Drive in Larssen sections, place timber and struts for culverts, foundations and in foundation pits during excavation and subsequent construction of newly designed structure with traffic running on it. Payment for all materials, tools, mechanical plant, haulage and labour. Payment per m^2 of timbering.	m^2	2,430.00	20,000.00	48,600,000.00
2/1.1.3.1.2.5		Насипање материјала / затрпавање темеља стубова, из ископа или позајмишта, у слојев има по 30 cm, земљаним материјалом, са н абијањем слојева до модула стшљивости М Плаћа се по m^3 набијеног материјала	Backfill pier foundations using earth from borrow pit, in 30 cm layers tamped to modulus of compresibility of Ms=30MPa. Payment per m^3 of tamped earth	m^3	4,112.73	1,800.00	7,402,914.00
2/1.1.3.1.2.6		Израда клина од крупнозрног тла иза стубо ва моста са набијањем у слојевима, дебљи не d=30cm, до вредности збијања D_{pr}≥0,98 и q_u≥ 1MPa. Ово тло се побољшава материја лом за везивање (цементом).	Bild gravel wedges behind end piers of well grained gravel tamped in 30cm layers to comaction value of Dpr≥0,98 и qu≥ 1MPa. This soil is improved with a bonding material (cement).	m^3	1,077.29	4,500.00	4,847,805.00
2/1.1.3.1.2.7		Израда испуне од крупнозрног материјала, са набијањем у слојевима, дебљине d=30cm, до вредности збијања Dpr≥1. Испу на се уграђује у слојевима дебљине по d=30cm, минимум 1m дебљине. Плаћа се по m^3 набијеног материјала.	Bild filling of well grained gravel tamped in 30cm layers o comaction value of Dpr≥1. The filling is bild in 30cm layers , in total minimum 1m thick. It is paid per m3 of compacted material.	m^3	3,766.34	4,100.00	15,441,994.00
2/1.1.3.1.2.8		Израда кегли, према пројекту, материјалом добијеним из усека или позајмишта са меха ничким набијањем у слојевима од по 30cm.	Build newly designed backwalls of earth recovered from cuttings or borrow pits and tamp them mechanically, 30 cm layers.	m^3	1,302.44	3,700.00	4,819,028.00

УКУПНО ЗЕМЉАНИ РАДОВИ:	**TOTAL EARTH WORKS:**	**85,631,378.40**

ПРОЈЕКАТ ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ
ПРУГА: СУБОТИЦА - ДРЖАВНА ГРАНИЦА (Келебија)
2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

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					A	B	A´B
2/1.1.3.1.3	**04**	**БЕТОНСКИ И АРМИРАНОБЕТОНСКИ РАДО**	**PLAIN AND REINFORCED CONCRETE**				
		Све позиције обухватају поред описа појединачних ставки и следеће заједничке услове : - Бетонски радови ће бити изведени у свему по пројекту, статичком прорачуну и важећим правилницима. Цене садрже све радне операције, ут рошке материјала, помоћни алат, оплате и скеле које прописују "Нормативи и стандарди рада у грађевинарству-Високоградња ГН 400", као и остале трошкове и зараду предузећа. - Бетон ће бити справљен, транспортован, уграђен, негован и испитиван на пробним узорцима по одредбама које прописује важећи "Правилни к о техничким нормативима за бетон и армирани бетон" (ПБАБ 87-"Службени лист СФРЈ" бр.11/87). - Бетон ће бити справљен од агрегата и цемента атестираних по важећим српским стандардима. - Бетон класе B.II мора имати све класе отпорности дефинисане појединачним позицијама. - Обрачун количина стварно изведених радова извршиће се према одредбама које прописују "Нормативи и стандарди рада у грађевинарству". -Мешање бетона мора се вршити машинским путем, а набијање вибрирањем -Арматура се плаћа посебно -Каблови се плаћају посебно -У цену бетона је урачуната оплата и скела -Плаћа се за потпуно готов посао од m³ уграђеног бетона				
	04.01	**Неармирани бетон**	**Plain concrete**				
2/1.1.3.1.3.1		Мршави бетон - изравњавајући слој, дебљи не 10 cm, C12/15, испод темеља стубова, к рилних зидова, темељних плоча, наглавних греда, прелазних плоча од бетона.	Cast lean concrete C12/15 for 10 cm thick blinding layers under pier foundations, wing walls, foundation slabs, pile caps, transition slabs.	m^3	67.58	12,000.00	810,960.00
2/1.1.3.1.3.2		Темељ кегле од бетона класе C20/25.	Cast backwall foundation of concrete class C20/25.	m^3	28.89	8,800.00	254,232.00
2/1.1.3.1.3.3		Облагање кегли бетонским плочама C20/25, у слоју песка, међусобно заливених цементним малтером. Плаћа се по m^2 потпуно изведене облоге.	Line backwalls with concrete flags C20/25, in sand bed, and grout gaps with cement mortar. Payment per m^2 of finished lining.	m^2	462.41	4,000.00	1,849,640.00
2/1.1.3.1.3.4		Израда носећег слоја од неармираног бето на класе C12/15, дебљине d=40cm, у прела зној зони између насипа и објекта. Плаћа се по m^3.	Bild bearing layer of plain concrete class C12/15, d=40cm tick , in transtion zone in the transition zone between the embankment and the bridge. Payment per m^3.	m^3	34.76	12,000.00	417,120.00
2/1.1.3.1.3.5		Израда слоја за пад од неармираног бетона класе C20/25, променљиве дебљине у свем у према графичкој документацији. Плаћа се по m3	Concrete layer for slope of plain concrete class C20/25, variable thickness according to graphic documentation. Payment per m3.	m^3	280.74	16,000.00	4,491,840.00

ПРОЈЕКАТ ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ
ПРУГА: СУБОТИЦА - ДРЖАВНА ГРАНИЦА (Келебија)
2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

DESIGN FOR BUILDING PERMIT
RAILWAY LINE: BELGRADE - SUBOTICA - STATE BORDER (Kelebia)
2/1.1.3.1 GALLERY DESIGN at km 78+377.03

Бр. поз. No.	Бр.поз. Техн Усл Item in Tech. Conditions	Опис радова	Description	Јед. мере Unit	Количина Quantity	Јед. цена (дин) Unit rate (Din)	Цена (дин) Price (Din)
					A	B	A´B
2/1.1.3.1.3.6		Израда заштитног слоја хидроизолације кол овозне конструкције, дебљине 5cm са поци нкованом мрежом, од бетона класе C16/20. У цену је урачуната и поцинкована мрежа, а плаћа се по m^2 заштићене површине.	Protective layer over the top slab waterproofing of cast lean concrete C16/20, 5 cm thick with galvanized reinforcing mesh The price includes galvanized reinforcing mesh, and is paid per m^2 of protected area.	m^2	1,233.56	1,000.00	1,233,560.00
	04.02	**Армирано бетонске темељне конструкциј**	**Reinforced concrete foundations**				
2/1.1.3.1.3.7		Армирани бетон темеља стубова и темеља крилних зидова, тракастих темеља, контра-греда, плочастих темеља, јастука, наглавни х греда и бунара. Бетон класе : C 30/37	Cast reinforced concrete in pier and wingwall foundations, strip foundations, counter beams, foundation mats, cushions, pile caps and wells. Concrete class: C 30/37	m^3	923.64	21,600.00	19,950,624.00
	04.03	**Стубови као ослонци распонских констр укција разних система и лежишне греде**	**Supporting piers under spanning construction of various systems and**				
2/1.1.3.1.3.8		Тело стубова галерије од бетона класе C 35/45, XC4, VI	Cast bodies of gallery piers, concrete class C 35/45, XC4, VI	m^3	138.53	27,600.00	3,823,428.00
2/1.1.3.1.3.9		Зидови галерије од бетона класе C 35/45, XC4, VI	Gallery walls of concrete class C 35/45, XC4, VI	m^3	1,450.75	27,600.00	40,040,700.00
	04.04	**Распонска конструкција моста од армира ног бетона**	**Bridge constructions in spans of reinforced concrete**				
2/1.1.3.1.3.10		Коловозна плоча галерије од армираног бет она.	Cast bridge deck of reiforced concrete. Concrete class C 35/45, XC4, XF3, VII, M200.	m^3	1,764.51	30,600.00	53,994,006.00
2/1.1.3.1.3.11		Ивични венци пешачких стаза ливени на ли цу места, (укључујући и ревизионе шахтове) од бетона класе C 40/50, XC4,, XF4, VIII,	Cast in situ footway cornices (with inspection chambers) of concrete class C 40/50, XC4, XF4, VIII, MS-S2.	m^3	374.34	37,200.00	13,925,262.00

УКУПНО БЕТОНСКИ РАДОВИ:	**TOTAL FOR CONCRETING:**	**140,791,372.00**

ПРОЈЕКАТ ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ
ПРУГА: СУБОТИЦА - ДРЖАВНА ГРАНИЦА (Келебија)
2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

DESIGN FOR BUILDING PERMIT
RAILWAY LINE: BELGRADE - SUBOTICA - STATE BORDER (Kelebia)
2/1.1.3.1 GALLERY DESIGN at km 78+377.03

Бр. поз. No.	Бр.поз. Техн Усл Item in Tech. Conditions	Опис радова	Description	Јед. мере Unit	Количина Quantity	Јед. цена (дин) Unit rate (Din)	Цена (дин) Price (Din)
					A	B	A´B
2/1.1.3.1.4	**05**	**РАДОВИ ОД МЕТАЛА**	**METALWORK**				
		Све позиције обухватају поред описа појединачних ставки и следеће заједничке услове: - Армирачки радови ће бити изведени у свему по пројекту, статичком прорачуну и важећим правилницима. Цене садрже све радне операције, утрошке материјала, помоћни алат и скеле које прописују "Нормативи и стандарди рада у грађевинарству-Високоградња ГН 400", као и остале трошкове и зараду предузећа. - Арматуру очистити од рђе и прљавштине, исправити, исећи, савити и уградити по детаљима (арамтурним нацртима) и статичком прорачуну. - За квалитет уграђене арматуре одговара извођач радова. - Јединична цена садржи и постављање подметача од челика,пластике или бетона за постизање предвиђених заштитних слојева и правилног положаја арматуре у конструкцији. Сва подеона гвожђа и узенгије ће бити чврсто везани за главну арматуру тако да не може доћи до промене положаја арматуре за време бетонирања конструкције. - Стварно уграђена количина арматуре свих квалитета обрачунава се по kg без обзира на сложеност и пречнике шипки арматуре. - Обрачун количина извршити према табличним тежинама арматуре и ужади и дужинама из арматурних нацрта.				
2/1.1.3.1.4.1		Набавка, чишћење, сечење, машинско савијање и монтажа арматуре према пропису, пројекту и статичким детаљима. Плаћа се по kg уграђене арматуре. Ребраста арматура B 500B	Purchase, wire brush, cut, bend mechanically and position bars according to the regulation, the design and the static detailed drawings. Payment per kg of positioned bars. Ribbed reinforcement B 500B	kg	930,353.00	120.00	111,642,360.00
		Арматурна мрежа	Ribbed reinforcement - mesh B 500B	kg	600.00	120.00	72,000.00

УКУПНО АРМИРАЧКИ РАДОВИ:	**TOTAL METALWORK:**	**111,714,360.00**

ПРОЈЕКАТ ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ
ПРУГА: СУБОТИЦА - ДРЖАВНА ГРАНИЦА (Келебија)
2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

DESIGN FOR BUILDING PERMIT
RAILWAY LINE: BELGRADE - SUBOTICA - STATE BORDER (Kelebia)
2/1.1.3.1 GALLERY DESIGN at km 78+377.03

Бр. поз. No.	Бр.поз. Техн Усл Item in Tech. Conditions	Опис радова	Description	Јед. мере Unit	Количина Quantity	Јед. цена (дин) Unit rate (Din)	Цена (дин) Price (Din)
					A	B	A´B
2/1.1.3.1.5	**06**	**ИЗОЛАТЕРСКИ РАДОВИ**	**WATERPROOFING**				
		- Сви изолатерски радови морају бити изведени педантно и тачно према захтевима из пројекта, предрачуна радова и детаљима. - Употребљени материјали морају одговарати важећим стандардима и прописима, снабдевени атестима овлашћене установе, проверени у упо треби, трајни колико и објекат или пројектовани тако да је њихова замена могућа. - Све грешке на конструкцији морају се на одговарајући начин отклонити или санирати пре почетка наношења изолационог материјала. - У јединичну цену је урачуната набавка свог потребног материјала, алата, транспорт и израда. - Плаћа се за потпуно готов посао по m^2 урађене изолације и/или заштите.					
2/1.1.3.1.5.1		Израда хидроизолације горње плоче и конз ола на бази метил метакрилата, прскањем под притиском. Радови по овој позицији се изводе у складу са техничким условима и н ормативима за ову врсту послова као и по т ехнологији произвођача. У цену су у рачуна ти набавка материјала, транспорт и уградњ	Spray under pressurea layer of waterproofing material based on methyl metacrilate on deck and cantilevers.Work against this item shall conform to the relevant technical conditions and standards, and the manufacturer's technology. The price includes purchase of materials,	m^2	1,787.25	4,150.00	7,417,087.50
2/1.1.3.1.5.2		Израда хидроизолације од једног хладног п премаза битулитом и једног премаза врућим битуменом бетонских површина које су у ко нтакту са земљом. У цену је урачуната и заштита површина пр ема деловима насипа који се набијају.	Apply waterproofing of one cold coat of bitumen emulsion and one hot bitumen coat onto concrete surfaces in contact with ground. The price includes waterproofing protection for the parts of compact embankment.	m^2	2,440.60	1,200.00	2,928,720.00
2/1.1.3.1.5.3		Израда заштите бетонских површина зашти тним хидрофобним премазом за бетон, на б ази пенетрата. Површине морају бити претх одно очишћене и суве. Премазивање подра зумева заштиту и импрегнацију свих видљи вих бетонских површина моста које су у дод иру са атмосферским утицајима.	Protect concrete surfaces with protective hydrophobic penetrat-based coats. Surfaces shall be clean and dry prior to application. This means that all visible concrete surfaces on the bridge exposed to atmosphere shall be coated for the purpose of protection and impregnation.	m^2	5,515.00	2,000.00	11,030,000.00
2/1.1.3.1.5.4		Израда другог слоја хидроизолације колово зне плоче ојачаним битуменским тракама з а хидроизолацију бетонских мостова. Радов и по овој позицији се изводе у складу са тех ничким условима и нормативима за ову врс ту послова као и по технологији произвођач а. У цену су у рачунати набавка материјал а, транспорт и уградња.	Aplication of the second layer of waterproofing with reinforcement bitumen sheets for waterproofing of concrete bridge decks. Work against this item shall conform to the relevant technical conditions and standards, and the manufacturer's technology. The price includes purchase of materials, transport and application.	m^2	1,233.56	1,770.00	2,183,401.20

ПРОЈЕКАТ ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ
ПРУГА: СУБОТИЦА - ДРЖАВНА ГРАНИЦА (Келебија)
2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

DESIGN FOR BUILDING PERMIT
RAILWAY LINE: BELGRADE - SUBOTICA - STATE BORDER (Kelebia)
2/1.1.3.1 GALLERY DESIGN at km 78+377.03

Бр. поз. No.	Бр.поз. Техн Усл Item in Tech. Conditions	Опис радова	Description	Јед. мере Unit	Количина Quantity	Јед. цена (дин) Unit rate (Din)	Цена (дин) Price (Din)
					A	B	A´B
2/1.1.3.1.5.5		Заштитни премаз бетона на пешачким стазама, степеницама и подестима, d=3-3.5 mm, формираног од 4 слоја: епокси прајмер, водоотпорни слој пур смоле, основни премаз пур смоле(полиуретан) са кварц песком (0.5-1 mm) и завршни слој пур смоле.	Apply protective coats onto concrete surface on footways, steps and landings, 3-3.5 mm thick, 4-ply of epoxy primer, water repellent pur resin, base coat of pur resin (polyurethane) with quartz sand (0.5-1 mm) and top coat of pur resin.	m^2	608.30	2,500.00	1,520,750.00

УКУПНО ИЗОЛАТЕРСКИ РАДОВИ: ТОТАЛ WATERPROOFING:	**25,079,958.70**

2/1.1.3.1.7	**08**	**ОСТАЛИ РАДОВИ**	**MISCELLANEOUS**				
		За све позиције наведених радова важи: * у цену је урачуната набавка свог потребног материјала, алата, механизације, транспорт, израда и монтажа према пројекту, а за комплетно за					
2/1.1.3.1.7.1		Израда и постављање ограде од челика S 235 JRG1. У цену је урачуната набавка материјала, израда, транспорт, монтажа, антикорозиона заштита са два основна и два завршна премаза покривном бојом, а у свему према пројекту. -цевне или од профила	Assemble and erect railing and fence of S 235 JRG1 steel. The price includes purchase of material, assembly transport, erection, anticorrosive protection of two primers and two top coats of paint, fully as designed. Payment per kg of railing/fence. - tubular railing or sections	kg	7,249.20	250.00	1,812,300.00
2/1.1.3.1.7.2		- висока жичана заштитна ограда	- high protective fence of steel mesh	kg	5,222.70	250.00	1,305,675.00
2/1.1.3.1.7.3		Израда и затварање спојница на бетону на местима споја дилатационих целина према детаљу из пројекта и спојева поклопаца на каналетама трајно еластичном масом. Плаћа се по m' уграђене спојнице.	Production and closing of joints on concrete at the joints of expansion joints according to the details from the project and joints of covers on the channels with permanently elastic mass. Payment per m' of finished joint.	m'	580.00	3,000.00	1,740,000.00

ПРОЈЕКАТ ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ
ПРУГА: СУБОТИЦА - ДРЖАВНА ГРАНИЦА (Келебија)
2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

DESIGN FOR BUILDING PERMIT
RAILWAY LINE: BELGRADE - SUBOTICA - STATE BORDER (Kelebia)
2/1.1.3.1 GALLERY DESIGN at km 78+377.03

Бр. поз. No.	Бр.поз. Техн Усл Item in Tech. Conditions	Опис радова	Description	Јед. мере Unit	Количина Quantity	Јед. цена (дин) Unit rate (Din)	Цена (дин) Price (Din)
					A	B	A´B
2/1.1.3.1.7.4		Набавка и постављање репера за монитори нг слегања	Procurement and positioning of benchmarks for settlement monitoring	ком. /pcs.	20.00	12,000.00	240,000.00
2/1.1.3.1.7.5		Постављање еластичног тепиха (простирке) за заштиту од буке и пригушење вибрација, између засторне призме и бетонске констру кције. У цену урачуната набавка, транспорт и уградња. Пла ћа се по m2 постављене еластичне прости	Placing elastic mat for suppression of noise and vibrations between ballast bed and concrete structure. The price includes procurement, transport and placing. Payment per m2 of placed elastic mat.	m^2	567.60	1,800.00	1,021,680.00
2/1.1.3.1.7.6		Испитивање готовог моста.	Test the newly built bridge.	паушално / lump sum			1,500,000.00
2/1.1.3.1.7.7		Фотографско снимање у току изградње мос та.	Make photo records in the course bridge building	паушално / lump sum			150,000.00
2/1.1.3.1.7.8		Израда и уграђивање плоче са годином изг радње моста.	Prepare and fix a plate inscribed with the year of bridge building.	паушално / lump sum			15,000.00
УКУПНО ОСТАЛИ РАДОВИ:			**TOTAL MISCELLANEOUS:**				**7,784,655.00**

ПРОЈЕКАТ ЗА ГРАЂЕВИНСКУ ДОЗВОЛУ
ПРУГА: СУБОТИЦА - ДРЖАВНА ГРАНИЦА (Келебија)
2/1.1.3.1 ПРОЈЕКАТ ГАЛЕРИЈЕ на km 78+377.03

DESIGN FOR BUILDING PERMIT
RAILWAY LINE: BELGRADE - SUBOTICA - STATE BORDER (Kelebia)
2/1.1.3.1 GALLERY DESIGN at km 78+377.03

Бр. поз. No.	Бр.поз. Техн Усл Item in Tech. Conditions	Опис радова	Description	Јед. мере Unit	Количина Quantity	Јед. цена (дин) Unit rate (Din)	Цена (дин) Price (Din)
					A	B	A´B
ЗБИРНА РЕКАПИТУЛАЦИЈА			**GRAND SUMMARY**				
2/1.1.3.1.1	**02**	**ИЗВОЂЕЊЕ HW ШИПОВА**	**HW PILES**				**122,598,952.06**
2/1.1.3.1.2	**03**	**ЗЕМЉАНИ РАДОВИ**	**EARTHWORKS**				**85,631,378.40**
2/1.1.3.1.3	**04**	**БЕТОНСКИ И АРМИРАНОБЕТОНСКИ РАДО**	**PLAIN AND REINFORCED CONCRETE**				**140,791,372.00**
2/1.1.3.1.4	**05**	**РАДОВИ ОД МЕТАЛА**	**METALWORK**				**111,714,360.00**
2/1.1.3.1.5	**06**	**ИЗОЛАТЕРСКИ РАДОВИ**	**WATERPROOFING**				**25,079,958.70**
2/1.1.3.1.6	**07**	**ЛЕЖИШТА И ДИЛАТАЦИЈЕ**	**BEARINGS AND EXPANSION JOINTS**				**0.00**
2/1.1.3.1.7	**08**	**ОСТАЛИ РАДОВИ**	**MISCELLANEOUS**				**7,784,655.00**

УКУПНО (дин): **GRAND TOTAL (Din):** **493,600,676.16**

Београд, април 2021. Belgrade, April 2021

Одговорни пројектант: Responsible designer:

Зоран Луковић, дипл.грађ.инж
лиценца бр.: 310 3032 03

Zoran Luković , grad.Civ.Eng.
Licence no.: 310 3032 03

2/1.1.3.1.6.2 СТАТИЧКИ ПРОРАЧУН

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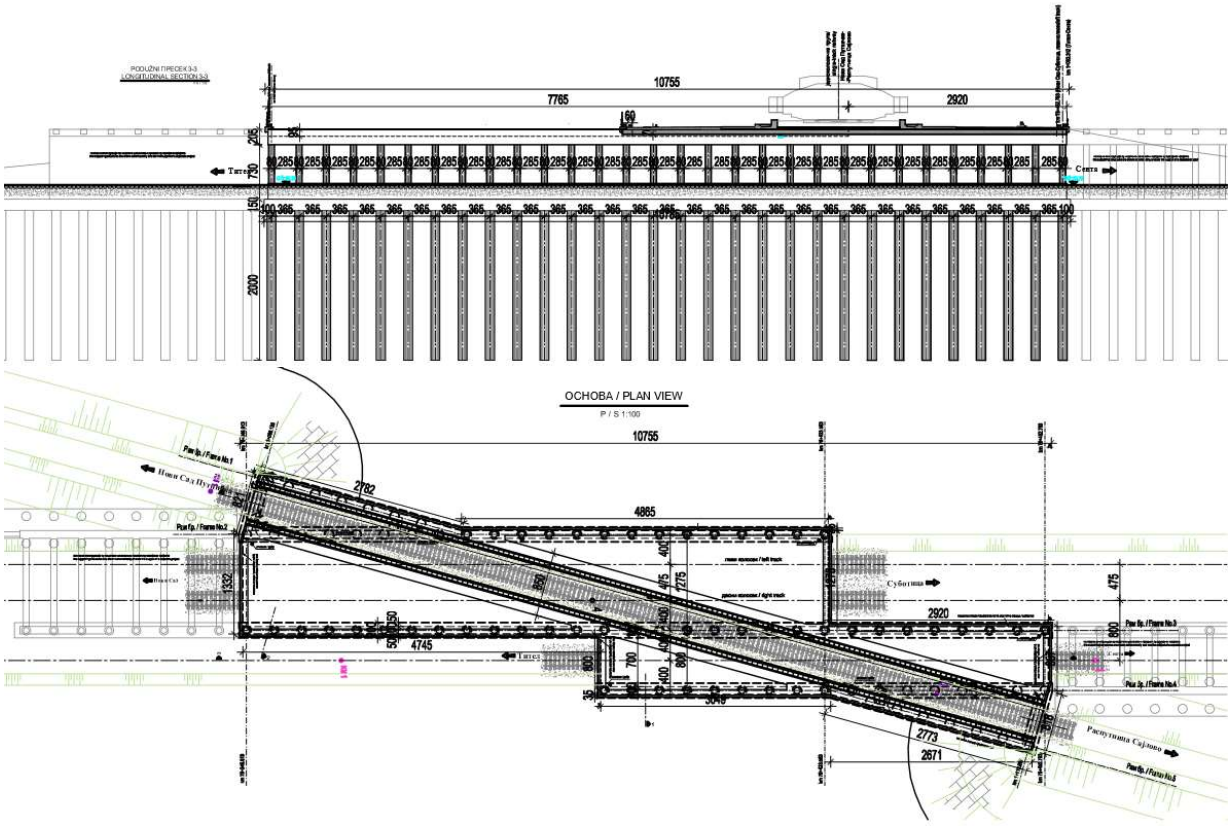

ПОПРЕЧНИ ПРЕСЕК 1-1
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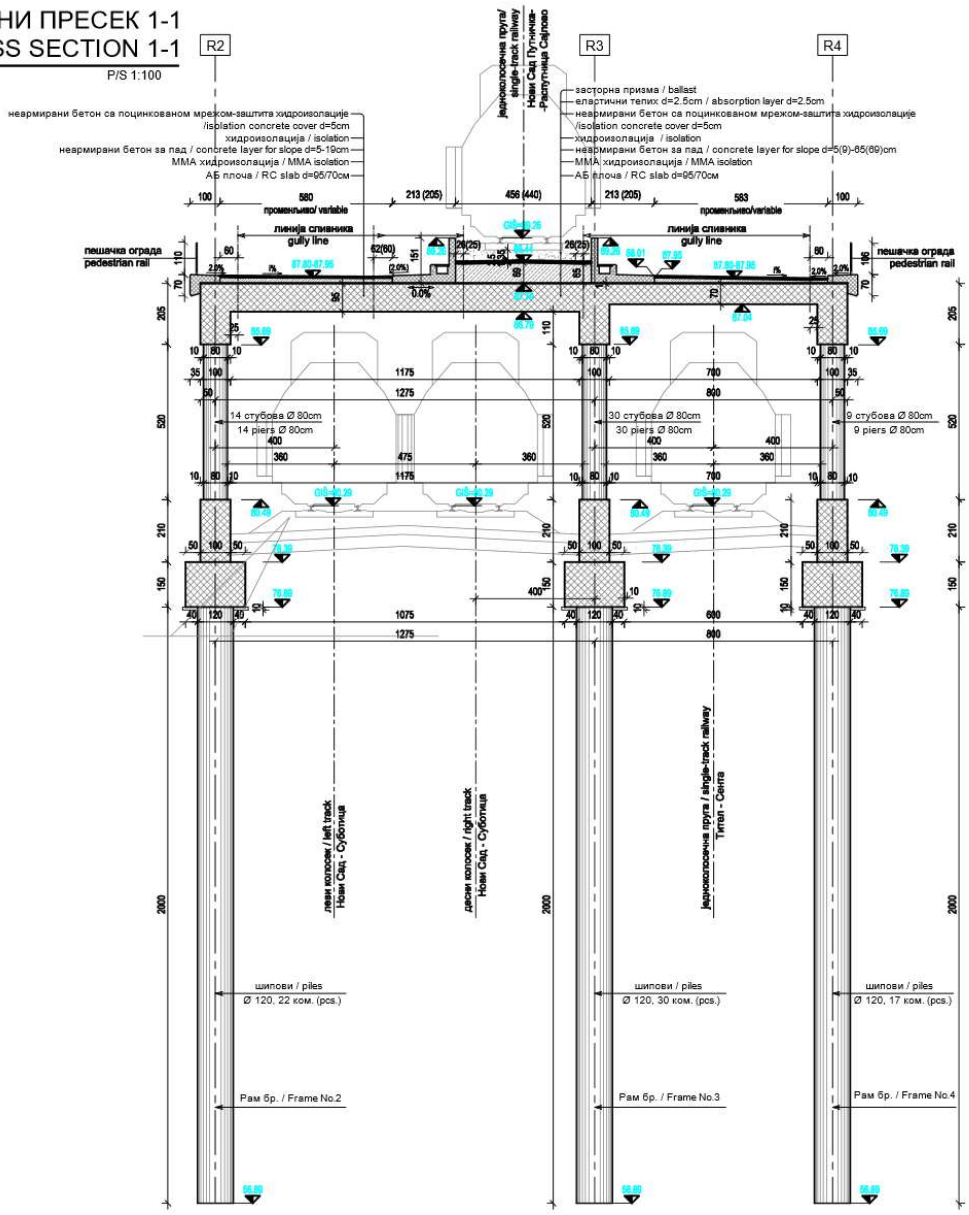
P/S 1:100



2. УЛАЗНИ ПОДАЦИ И УСВОЈЕНИ МАТЕРИЈАЛИ / INPUT DATA AND ADOPTED MATERIAL

2.1. ПОДАЦИ И ПОДЛОГЕ ЗА ПРОРАЧУН / BASIC REQUIREMENTS

- угао укрштаја / intersection angle — α= 15°35"15"
- дужина галерије по оси горњег колосека / lenght of the gallery — L= 109.62m
- ширина галерије (без ивичног венца) / width of the gallery — B= 22.25m
  управно на главне пролазне колосеке брзе пруге
- дебљина АБ плоче изнад главних пролазних колосека
  ticknes of the top slab above Novi Sad - Subotica main tracks — h_1= 0.95m
- дебљина АБ плоче изнад пруге Тител-Сента
  ticknes of the top slab above Titel - Senta track — h_2= 0.70m
- радијус кривине свих колосека / curvature of the tracks — R_{sr}= 0,00m
- прорачунска брзина / Calculated speed — v= 65km/h
- експлоатациони век / service life — 100 год.

2.2. МАТЕРИЈАЛИ - бетон / MATERIAL - concrete

Карактеристична чврстоћа бетона на притисак старог 28дана concrete compressive strength at 28days	f_{ck} = 40 N/mm^2
Средња затезна чврстоћа бетона tensile strength	f_{ctm} = 3,5 N/mm^2
Секантни модул еластичности Modulus of elasticity	E_{cm} = 35000 N/mm^2

2.3. МАТЕРИЈАЛИ - челик за армирање / MATERIAL - reinforcing steel

B500B EN 10800-3

f_{yk} =	500	N/mm^2 граница развлачења / the yield strength
f_{tk} =	540	N/mm^2 карактеристична затезна чврстоћа / the characteristic value of the tensile strength
B -	H	висока класа дуктилности / high class ductulity
E_s =	200000	N/mm^2 модул еластичности / modulus of elasticity

2.4. КОЛОСЕК / TRACK CHARACTESRITICS

- UIC, заварен у континуални тракт
- радијус кривине / curvature — R_{sr}= 0,00m
- надвишење колосека / rail elevation — $h_{nad,max}$ = 0,00mm
- нагиб колосека / slope — прелазна вертикална кривина Rv=3000m

(теме вертикалне кривине налази се при средини дужине галерије)

Висина над саобраћајницом /

Испод галерије пролазе двоколосечна брза пруга Нови Сад-Суботица и једноколосечна пруга Тител-Сента. Висине слободних профила износе 6.40m и 6.80m респективно.

3. ОДРЕЂИВАЊЕ КРУТОСТИ ТЛА / SOIL MODEL

Тло је моделирано помоћу опруга.

The soil was modeled using springs.

Bočna krutost tla po Vesiću : $k_s = \frac{0.65}{D}\sqrt[12]{\frac{E_s D^4}{E\,I}}\frac{E_s}{1-\nu^2}$

Horizontalna krutost u dva ortogonalna pravca linijskog oslonca duž šipa : $K_{1,2} = k_s D$

Koeficijenti zapreminske deformacije za vertikalno opterećenje po Randolph-y (za jedan šip) :

na bazi šipa : $K_b = \frac{4 * r_0 * G}{1-\nu}$

na omotaču šipa : $K_s^i = \frac{2 * \pi * l * G}{\ln\left(\frac{r_m}{r_0}\right)}$

Bočna krutost tla po Meyerhof and Baike: $k_s^i = \frac{E_s^i}{B(1-\nu^2)}$

D	E	I
m	kN/m^2	m^4
1.2	3.15E+07	0.1018

sloj	h	φ	M_S	ν	E_S	k_S	$k_S^{(**)}$	$K_{1,2}$	$K_{1,2}^{(**)}$	K_S	K_S^i
	m	°	kN/m^3		kN/m^2	kN/m^3	kN/m^3	kN/m^2	kN/m^2	kN/m	kN/m
1	3.60	26.0	11400	0.18	10501	3878	9043	4653	10852	6619	23828
2	3.00	26.0	11400	0.18	10501	3878	9043	4653	10852	6619	19856
3	13.40	30.0	15000	0.17	14000	5270	12000	6324	14400	8890	119129
	20.00									K_b	17280
										K_U	180093

(**) ... Meyerhof and Baike (korišćeno u statičkom proračunu)

4. АНАЛИЗА ОПТЕРЕЋЕЊА / ACTIONS

4.1 СТАЛНА ДЕЈСТВА / PERMANENT LOADS

4.1.1. Сопствена тежина и додатно стално / Self-weight and dead load

АНАЛИЗА ОПТЕРЕЋЕЊА / ACTIONS

Сопствена тежина узета је програмски у програмском пакету Tower
The TOWER program takes the self-weight of the construction elements automatically

Додатно стално оптерећење / Dead load

Оптерећење у зони туцаника / Ballast

Шине, прагови, колосечни прибор / track elements

g'_k = (1,20+4,85+0,40) kN/m	6,450	/ m /
$g_k = g'_k$ / 4,40	**1,47**	/ kN/m^2 /

Туцаник / ballast

$d_т$ - дебљина туцаника	0,65	/ m /
$g_т = d_т$ * 22	**15,60**	/ kN/m^2 /

Еластични тепих / elastic mat

$d_{ет}$ - дебљина тепиха	0,025	/ m /
$g_{ет} = d_т$ * 22	**0,60**	/ kN/m^2 /

Заштита хидроизолације / isolation protection concrete

d_c - дебљина неармираног бетона	0,050	/ m /
$g_c = d_т$ * 24	**1,20**	/ kN/m^2 /

Хидроизолација / isolation

d_{h1} - дебљина хидроизолације 1	0,01	/ m /
d_{h2} - дебљина хидроизолације 2	0,01	/ m /
$g_h = (d_{h1}+d_{h2})* 24$	**0,48**	/ kN/m^2 /

Бетон за пад / concrete for the slope

d_{b1} - дебљина средина	0,68	/ m /
d_{b2} - дебљина крајеви	0,07	/ m /
$g_{h1} = d_{b1}* 24$	**16,32**	/ kN/m^2 /
$g_{h2} = d_{b2}* 24$	**1,68**	/ kN/m^2 /

површинско оптерећење у зони туцаника:

distributed load:

средина:	**35,67**	/ kN/m^2 /
почетак / крај:	**21,03**	/ kN/m^2 /

Оптерећење у зони ревизионе стазе обострано / inspection path

Бетон пешачке стазе, поклопци, парапет

A_{fp1} - попречни пресек бетона средина/concrete cross section . .	0,84	/ m^2 /
A_{fp2} - попречни пресек бетона крајеви/concrete cross section . . .	0,72	/ m^2 /
$g_{fp1} = A_{fp1} / 2,0 * 25$	**10,50**	/ kN/m^2 /
$g_{fp2} = A_{fp2} / 2,0 * 25$	**9,00**	/ kN/m^2 /

Инсталације

g_i - тежина инсталација по дужном метру.	**1,00**	/ kN/m^2 /
$g_{ip} = g_i / 2,0$	**0,50**	/ kN/m^2 /

површинско оптерећење у зони ревизионе стазе:

distributed load:

средина:	**11,00**	/ kN/m^2 /
почетак / крај:	**9,50**	/ kN/m^2 /

Оптерећење по ободу плоче / edge of the slab actions

Бетон ревизионе стазе са ивичним венцем

A_{fp1} - попречни пресек бетона средина/concrete cross section . . 0,38 / m^2 /

$g_{fp1} = A_{fp1} * 25$ . . . . . **9,50** / kN/m^2 /

пешачка ограда / pedestrian rail

g_{pr} . . . . . **0,30** / kN/m /

заштитна мрежа / safety net

g_{sn} . . . . . **0,40** / kN/m /

линијско оптерећење по ободу плоче:

linear loads:

ивице без заштитне мреже: **9,80** / kN/m^2 /

ивице са заштитном мрежом: **10,20** / kN/m^2 /

4.1.2. *Оптерећење од земље (γ=20 kN/m3; φ=30°) /* Earth pressure

– Миран притисак - наноси се на зидове моста.

φ=30° h=11.71m

γ=20kN/m^3

$p_h=\gamma \times h \times (1-\sin\varphi)=20x11.71x0,5=117.1kN/m^2$

– Притисак тла од збијања 40kN/m^2

– Додатак на притисак тла од температурног ширења

померање врха обалног стуба - ширење

d= 16,63 mm

K*= 0,72188 K_{0s1}*= 169,065 kN/m^2

K*= 0,72188 K_{0s2}*= 169,065 kN/m^2

4.1.3. Скупљање / Shrinkage

Прорачун средњег полупречника пресека:

$$h_0 = \frac{2 * Ac}{u}$$

h= 950 mm

Прорачун коефицијента скупљања

$$\varepsilon_{cs}(t,t_s) = \varepsilon_{cs0} * \beta_s(t-t_s) \qquad \varepsilon_{cs0} = \varepsilon_s(f_{cm}) * \beta_{RH}$$

$$\varepsilon_s(f_{cm}) = (160 + \beta_{sc} * (90 - f_{cm})) * 10^{-6}$$

β_{sc}= 5 *за цементе са обичним или брзим стврдњавањем*

Бетон **C35/45**

f_{ctm} = 43 Mpa

ε_s= 0.000395

$\beta_{RH} = -1.55 * \beta_{sRH}$ $\quad RH = 70\%$

$$\beta_{sRH} = 1 - \left(\frac{RH}{100}\right)^3 = 1 - 0.7^3 = 0.657$$

$\beta_{RH} = -1.55 * 0.657 = -1.018$

$\varepsilon_{cs0} = \varepsilon_s(f_{cm}) * \beta_{RH}$

ε_{cs0}= 0.00040211

$$\beta_s(t - t_s) = \left(\frac{t - t_s}{0.035 * h_0^{\,2} + t - t_s}\right)^{0.5}$$ *коефицијент који описује временску промену скупљања*

t – *старост бетона у тренутку посматрања*

$t_s = 3$ *дана* – *старост бетона у данима у тренутку када се почиње посматрати скупљање*

t=	*30*	*dana*	*30000*	*dana*
$\beta_s(t-t_s)$=	0.029223937		0.697916	
$\varepsilon_{cs}(t,t_s)$=	1.17512E-05		0.000281	

Прорачун коефицијента течења

$\varphi(t,t_0) = \varphi_0 * \beta_c(t - t_0)$ $\quad \varphi_0 = \varphi_{RH} * \beta(f_{cm}) * \beta(t_0)$

RH= *70* %

$$\phi_{RH} = 1 + \frac{1 - RH/100}{0.1 * \sqrt[3]{h_0}} =$$ 1.31

$$\beta(f_{cm}) = \frac{16.8}{\sqrt{f_{cm}}} =$$ 2.56

$$\beta(t_0) = \frac{1}{0.1 + t_0^{\,0.2}} =$$ 0.55

t0= 15 dana *старост бетона у данима у тренутку почетка деловања оптерећења*

φ_0= 1.84

$$\beta_H = 1.5*(1+(0.012*RH)^{18})*h_0+250 =$$ 1675 ≤ 1500

$$\beta_c(t-t_0)=\left(\frac{t-t_0}{\beta_H+t-t_0}\right)^{0.3}$$

t – старост бетона у данима у тренутку посматрања

t=	*30*	*dana*	*30000*	*dana*
$\beta_s(t-t_0)$=	0.250439938		0.697844	
$\varphi(t,t_0)$=	0.460435312		1.282991	

$t = 30000$ *дана* $\quad \varepsilon_{cs}(t,t_s) = 0.308*10^{-3} = \alpha_t * T \quad \alpha_t = 1*10^{-5} \quad T = 30{,}8^{\circ}C$

$$E_{c,eff} = \frac{E_{cm}}{1+\phi(t,t_0)} =$$ E_{cm}/2.04

T= -13 °C

Истим поступком за делове галерије са плочом дебљине 70cm добија се -12°C

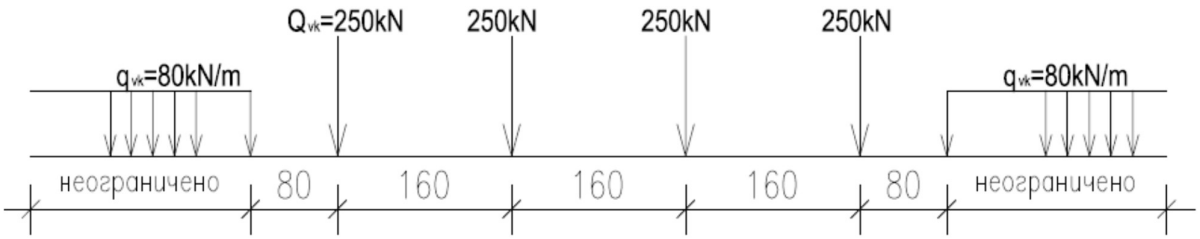
Скупљање узето у обзир као еквивалентна температурна промена у оси од t_o= -13°C.
Shrinkage taken into account as the equivalent temperature change t_o= -13°C.

4.2 ПРОМЕНЉИВА ДЕЈСТВА / VARIABLE ACTIONS

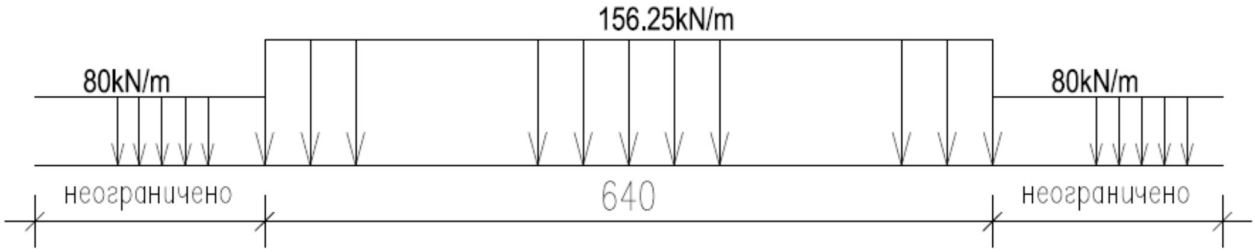
- ***ВЕРТИКАЛНА САОБРАЋАЈНА ДЕЈСТВА / VERTICAL TRAFFIC LOADS***

4.2.1. Вертикална оптерећења од воза / Train on the bridge

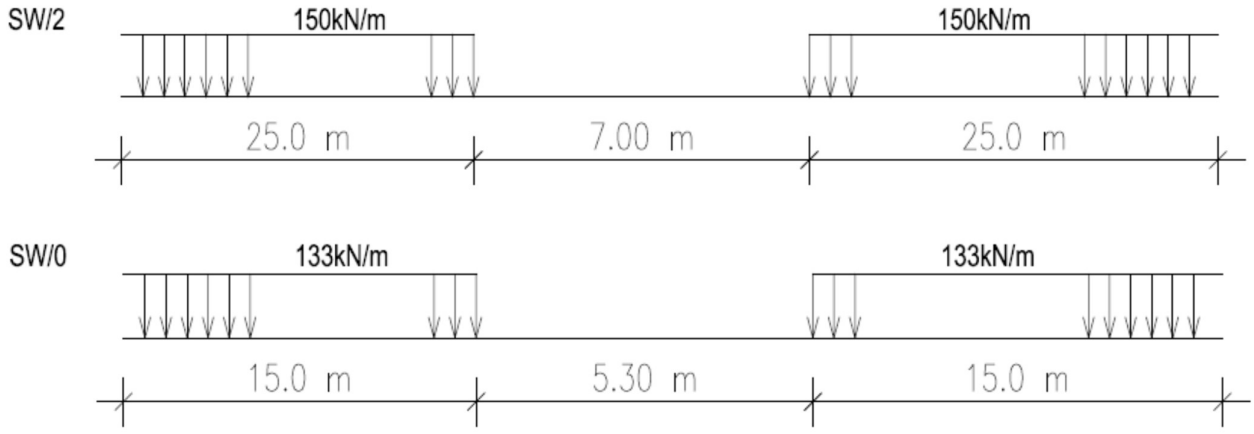
- шема LM71 / load model LM71



- шема LM71 једнакоподељено оптерећење / LM71 (uniformly distribution)



- шеме SW / load model SW:



- "unloaded train": вертикално равномерно расподељено оптерећење чија је карактеристична вредност q_k=10kN/m.

-"unloaded train": uniformly distributed characteristic load q_k=10kN/m

У комбинацијама оптерећења фигуришу само меродавна саобраћајна оптерећења, док су она која нису меродавна једноставном претходном контролом на моделу елиминисана из прорачуна.

In the combination of sctions only the relevant traffic loads appear.

- **Вредност коефицијента прилагођавања износи / Classification factor α=1.21**

- **Динамички коефицијент / Dynamic factor**

$$1{,}00 \le \Phi_2 = \frac{1{,}44}{\sqrt{L_\Phi} - 0{,}2} + 0{,}82 \le 1{,}67$$ ..... на пажљиво одржаваним пругама / for carefully maintened track

$$1{,}00 \le \Phi_3 = \frac{2{,}16}{\sqrt{L_\Phi} - 0{,}2} + 0{,}73 \le 2{,}00$$ ..... на нормално одржаваним пругама / for track with standard maintenance

- одређивање дужине L_Φ / Determinant length L_Φ

Зона средине галерије, конструкција на 2 распона

$L_\Phi = k * L_m$, but not less than max L_i

k=1.4

According to EN 1991-2:2003, таб.6.2 (5.3), Consider as three-span continuoas beam (use 5.2, with vertical and horizontal lengths of members of the frame)

L_m = (2*10.3+8.0+12.75) / 4 = 10.34m

L_Φ = 1,4*10.34=14.47m > 12.75m → L_Φ=14.47m

$\Phi_3 = 2{,}16/(L_\Phi^{0{,}5} - 0{,}2) + 0{,}73 = 1{,}33$

Зона крајева галерије, конструкција на 1 распону

$L_\Phi = k * L_m$, but not less than max L_i

k=1.3

According to EN 1991-2:2003, таб.6.2 (5.3), Consider as three-span continuoas beam (use 5.2, with vertical and horizontal lengths of members of the frame)

L_m = (2*10.3+12.75) / 3 = 11.12m

L_Φ = 1,3*11.12=14.45m > 12.75m → L_Φ=14.45m

$\Phi_3 = 2{,}16/(L_\Phi^{0{,}5} - 0{,}2) + 0{,}73 = 1{,}33$

Усваја се / Adopted fot the calculation **Φ_3=1,33**

- **Контрола фреквенције сопствених осцилација / The natural frequency of the construction control**

- горња граница сопствених фреквенција

$n_{0,sup} = 94{,}76 x L^{-0{,}748} = 11{,}91$ Hz

- доња граница сопствених фреквенција

$n_{0,inf}$ = 80/L = 5 Hz

Modalna analiza

Napredne opcije seizmičkog proračuna:

Multiplikator krutosti oslonaca: 2.300

Faktori opterećenja za proračun masa

No	Naziv	Koeficijent			
1	sopstvena težina (g)	1.00	10	voz na nasipu	0.00
2	PN t=0	1.00	11	ΔTn,exp=32	0.00
3	ΔPN	1.00	12	ΔTn,con=-30	0.00
4	mrtav teret	1.00	13	ΔTm,heat=8	0.00
5	pritisak tla u miru sa nabijanjem	1.00	14	ΔTm,cool=-8	0.00
6	skupljanje	0.00	15	dts	0.00
7	LM 71	0.00	16	iskliznuce voza1	0.00
8	SW/2	0.00	17	iskliznuce voza2	0.00
9	KP	0.00			

Raspored masa po visini objekta

Nivo	Z [m]	X [m]	Y [m]	Masa [T]	T/m2
kolovozna ploca	0.00	9.00	-2.10	625.65	
naglavica	-5.50	9.00	-2.12	862.35	17.67
Ukupno:	-3.19	9.00	-2.11	1488.01	

Položaj centara krutosti po visini objekta

Nivo	Z [m]	X [m]	Y [m]
kolovozna ploca	0.00	9.00	-0.44
naglavica	-5.50	9.00	-2.10

Ekscentricitet po visini objekta

Nivo	Z [m]	eox [m]	eoy [m]
kolovozna ploca	0.00	0.00	1.67
naglavica	-5.50	0.00	0.02

Periodi oscilovanja konstrukcije

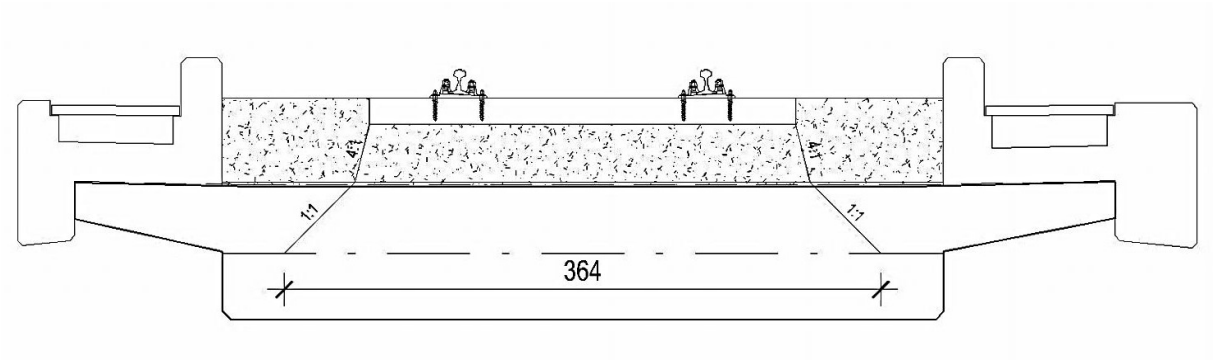
No	T [s]	f [Hz]
1	0.4503	2.2207
2	0.4328	2.3106
3	0.4098	2.4400
4	0.1501	6.6632
5	0.1491	6.7084

Сопствена фреквенција конструкције се рачуна мултимодалном анализом
The natural frequency of the construction is calculated by multimodal analysis

Први вертикални тон осциловања конструкције / The first vertical tone

$n_{0,inf}$ <n_0=6,66Hz< $n_{0,sup}$

- **Распростирање оптерећења од воза на системску лонију мостовксе конскtрукције / Equivalent uniformly distributed load distributed on the middle plane**



За шему оптерећења LM71 у системној линији ће деловати следећа карактеристична оптерећења:
- на дужини од 6,4m →$p`_{LM71}$=156/3,64=42,86 kN/m^2
- ван дужине од 6,4m→$p``_{LM71}$=80/3,64=21,98 kN/m^2

$p_{1,LM71}$= Φ_3* $p`_{LM71}$=1,3*42,86=<u>55,72 kN/m^2</u>
$p_{2,LM71}$= Φ_3* $p``_{LM71}$=1,3*21,98=<u>28,57 kN/m^2</u>

За шему оптерећења SW/2 у системној линији ће деловати следеће карактеристично оптерећење:

$p`_{SW/2}$=150/3,64=41,21 kN/m^2
$p_{SW/2}$= Φ_3* $p`_{SW/2}$=1,3*41,21=<u>53,57 kN/m^2</u>

- **Бочна ексцентричност вертикалног оптерећења / Lateral eccentricity of the vertical load**

$\frac{Q_{v1}}{Q_{v2}} \leq 1{,}25 \quad \rightarrow \quad e \leq \frac{1}{18}$

Q_{v1}, Q_{v2} оптерећења точкова леве и десне осовине
r = 1500 mm; размак шина – осовина точкова
e = ± 83mm ексцентрицитет резултанте вертикалног оптерећења
Ексцентричност вертикалног оптерећења није меродавна и неће се узети у прорачуну.
Lateral eccentricity of the vertical load will not be taken into account.

4.2.2. <u>Покретно оптерећење од пешачке навале на пешачким стазама/ Characteristic load on a footway</u>

Вертикално расподељено оптерећење које се распоређује на службеним стазама на мосту:
p_p = 5 kN/m^2

- ***ХОРИЗОНТАЛНА САОБРАЋАЈНА ДЕЈСТВА / HORIZONTAL FORCES DUE TO TRAFFIC LOAD***

4.2.3. Центрифугална сила / Centrifugal force

Како је траса на мосту у правцу, не постоји центрифугална сила.
There is no centrifugal forces for strait track.

4.2.4. Бочни удар / Nosing force

Карактеристична вредност хоризонталне силе бочног удара износи Q_{sk}= 100kN.
Characteristic value for nosinf force is Q_{sk}= 100kN.
Концентрисано оптерећење од силе бочног удара задаје се хоризонтално управно на осу колосека у висини горње ивице шине. Увек се задаје заједно са вертикалним оптерећењем.
The nosing force shall be taken as a concentrated force acting horizontally, at the top of the rails, perpendicular to the centre-line of track.The nosing force shall always be combined with a vertical traffic load.
hsr=1,71m
M_{sk}=100*1,71=171,0 kNm

4.2.5. Силе покретања и кочења / Actions due to traction and braking

Ова оптерећења делују у нивоу горњих ивица шина. Равномерно расподељеним оптерећењем оптерећује се зона оптерећена вертикалним оптерећењем (у случају SW).
Traction and braking forces act at the top of the rails in the longitudinal direction of the track. They shall be considered as uniformly distributed over the corresponding influence length.

Сила покретања / Traction
$Q_{lak} = 33 \times L \leq 1\,000$ kN — за шеме оптерећења LM71 и SW

Сила кочења / Braking
$Q_{lbk} = 20 \times L \leq 6\,000$ kN — за шеме оптерећења LM71 и SW/0
$Q_{lbk} = 35 \times L$ — за шему оптерећења SW/2

L меродавна дужина оптерећења (m)
Q_{lak} сила покретања (kN)
Q_{lbk} сила кочења (kN)

Сила покретања / Traction
$Q_{lak} = 33 \times 109.03$ = 3598kN, усвајамо 1 000 kN

q_{lak} = 1000/109,03=9,17 kN/m за шеме оптерећења LM71 и SW

Сила кочења
$Q_{lbk} = 20 \times 109{,}03 = 2180$ kN ≤ 6 000 kN

q_{lbk} =20 kN/m за шеме оптерећења LM71 и SW/0
q_{lbk} = 35 x 50/109.03=16.05 kN/m за шему оптерећења SW/2

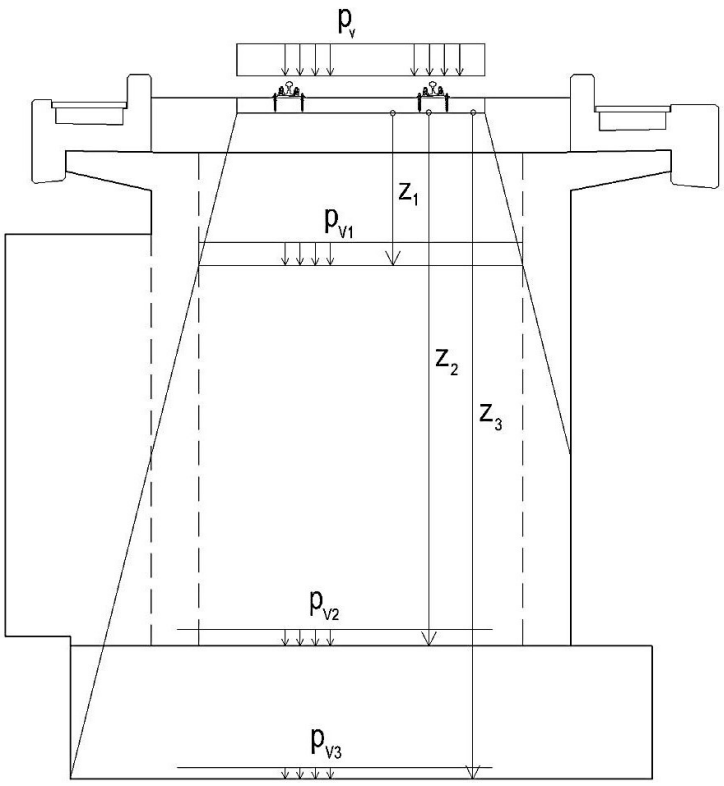
Сила кочења и покретања се множе фактором α. Actions due to traction and braking will be multipled by classification factor α.

4.2.6. *Оптерећење од воза на насипу (хор. оптерећење на стубове и крила)* *Equivalent vertical loading for earth pressure*

Хоризонтално оптерећење на стубове од дејства воза на насипу се рачуна по обрасцу:
$e=p_v*(1-\sin\varphi)$ где су:
p_v→вертикално оптерећење у тлу од воза на насипу
φ→угао унутрашњег трења (φ=30°)

Оптерећење од тла које делује на бочне зидове
- Од концентрисаних сила LM 71 / single loads

$p_1=52\times(1-\sin30^o)=26$ kN/m^2
$p_2=\frac{26x3}{9}=8{,}67$kN/m^2



4.2.7. Хоризонтални утицаји од оптерећења од воза / equivalent horizontal traffic loading

Оптерећење тла које делује на шипове / Earth pressure on piles
E=(2x6+5.875x41)x0,5=126,44kN/m'
E=E/hq=126,44/1,5=84,29kN/m^2
E*D/2=84,29x0,6=50,58kN/m'

ОСТАЛА ПРОМЕНЉИВА ДЕЈСТВА / OTHER VARIABLE ACTIONS

4.2.8. Температурна дејства / Termalactions

Температурна дејства су дефинисана стандардом EN 1991-1-5. Од надлежне метеоролошке институције је неопходно прибавити следеће параметре:

Termalactions are given according to SRPS EN 1991-1-5. It is necessery to obtain the following parameters from the competent meteorological institution:

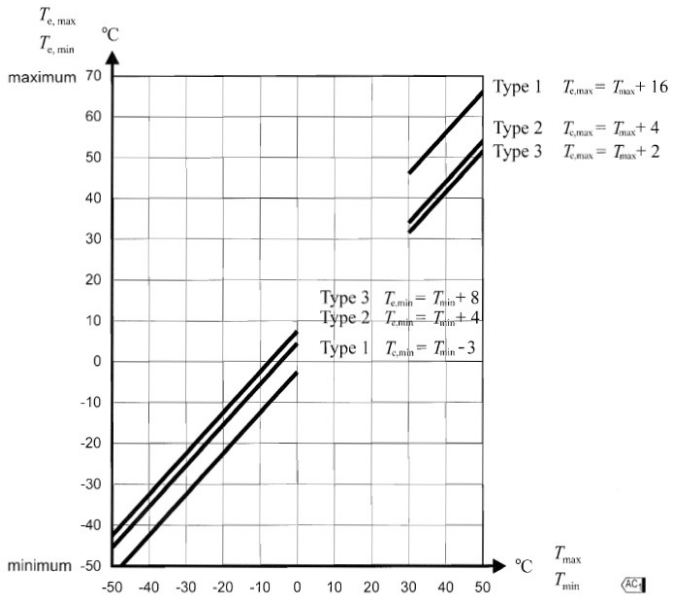
T_{max} максимална температура ваздуха у хладу са годишњом вероватноћом прекорачења од 0,02 (еквивалентно повратном периоду од 50 година)
value of maximum shade air temperature with an annual probability of being exceeded of 0,02 (equivalent to a mean return period of 50 years)

T_{min} минимална температура ваздуха у хладу са годишњом вероватноћом прекорачења од 0,02 (еквивалентно повратном периоду од 50 година)
value of minimum shade air terrlperature with an annual probability of being exceeded of 0,02 (equivalent to a nlean return period of 50 years)

- Репрезентативне вредности температурних деловања процењују се на основу: компонента равномерне температуре и компонента температурне разлике.
- Representativ values of termalactions are estimated on the basis of : the uniform temperature componet and the temperature difference component.

Table 6.1: Recommended values of linear temperature difference component for different types of bridge decks for road, foot and railway bridges

Type of Deck	Top warmer than bottom	Bottom warmer than top
	$\Delta T_{M,heat}$ (°C)	$\Delta T_{M,cool}$ (°C)
Type 1: Steel deck	18	13
Type 2: Composite deck	15	18
Type 3: Concrete deck: - concrete box girder - concrete beam - concrete slab	 10 15 15	 5 8 8
NOTE 1: The values given in the table represent upper bound values of the linearly varying temperature difference component for representative sample of bridge geometries. NOTE 2: The values given in the table are based on a depth of surfacing of 50 mm for road and railway bridges. For other depths of surfacing these values should be multiplied by the factor k_{sur}. Recommended values for the factor k_{sur} is given in Table 6.2.		



- **Утицај равномерне температурне промене** / Uniform temperature componet

T_{max} = 42°C максимална температура ваздуха у хладу/ maximum shade air temperature

T_{min} = -28°C минимална температура ваздуха у хладу/ minimum shade air temperature

$T_{e,max}$ = 41°C максимална прорачунска температура моста / maximum uniform bridge temperature component

$T_{e,min}$ = -20°C минимална прорачунска температура моста / minimum uniform bridge temperature component

T_0 = 10°C температура за време грађења / the temeperature at the time the structure is restrained

$\Delta T_{N,con} = -(T_0 - T_{e,min}) = -(10-(-20))=-30°C$ max. скраћење / the maximum contraction range

$\Delta T_{N,exp} = T_{emax} - T_0 = 42-10=32°C$ max. издужење / the maximum expansion range

Укупни распон прорачунских температура моста

The overall range of the uniform bridge temperature component

$\Delta T_{N,exp} = T_{emax} - T_{e,min} = 61°C$

- **Утицај линеарне промене температуре – температурне разлике / Temperature difference component**

У току одређеног временског периода, грејање и хлађење горње површине коловозне плоче моста изазива промену температуре од максималног грејања (горња површина топлија), односно ,од максималног хлађења (доња површина топлија).
Over a prescribed time period heating and cooling of a bridge deck's upper surface will result in a maximum heating (top surtace warmer) and a maximum cooling (bottom surface warmer) temperature variation.

Линеарна температурна промена поједностављено се узима прорачуном еквивалентне позитивне и негативне разлике у температури.
The effect of vertical temperature differences should be considered by using an equivalent linear temperature difference component.

$\Delta T_{M,heat} = \Delta T_{M,pos(50)} \times k_{sur}$

$\Delta T_{M,cool} = \Delta T_{M,neg(50)} \times k_{sur}$

$\Delta T_{M,heat}$ позитивна линеарна температурна промена (горња површина топлија)
positive vertical temperature difference (bottom warmer than top)

$\Delta T_{M,cool}$ негативна линеарна температурна промена (доња површина топлија)
negative vertical temperature difference (bottom warmer than top)

$\Delta T_{M,heat(50)}$, $\Delta T_{M,cool(50)}$ карактеристичне вредности линеарне температурне промене за дебљину коловозног застора од 50mm
characteristic values for temperature difference on a depth of surfacing of 50mm.

k_{sur} фактор корекције у односу на основну дебљину коловозног застора

Table 6.1: Recommended values of linear temperature difference component for different types of bridge decks for road, foot and railway bridges

Type of Deck	Top warmer than bottom	Bottom warmer than top
	$\Delta T_{M,heat}$ (°C)	$\Delta T_{M,cool}$ (°C)
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NOTE 1: The values given in the table represent upper bound values of the linearly varying temperature difference component for representative sample of bridge geometries. NOTE 2: The values given in the table are based on a depth of surfacing of 50 mm for road and railway bridges. For other depths of surfacing these values should be multiplied by the factor k_{sur}. Recommended values for the factor k_{sur} is given in Table 6.2.		

Table 6.2: Recommended values of k_{sur} to account for different surfacing thickness

Road, foot and railway bridges						
Surface Thickness	Type 1		Type 2		Type 3	
	Top warmer than bottom	Bottom warmer than top	Top warmer than bottom	Bottom warmer than top	Top warmer than bottom	Bottom warmer than top
[mm]	k_{sur}	k_{sur}	k_{sur}	k_{sur}	k_{sur}	k_{sur}
unsurfaced	0,7	0,9	0,9	1,0	0,8	1,1
water-proofed [1)]	1,6	0,6	1,1	0,9	1,5	1,0
50	1,0	1,0	1,0	1,0	1,0	1,0
100	0,7	1,2	1,0	1,0	0,7	1,0
150	0,7	1,2	1,0	1,0	0,5	1,0
ballast (750 mm)	0,6	1,4	0,8	1,2	0,6	1,0
[1)] These values represent upper bound values for dark colour						

$k_{sur,heat}$ = 0,6 $\Delta T_{M,heat}$ = 15 x 0,54 = + 8,1°C

$k_{sur,cool}$ = 1,0 $\Delta T_{M,cool}$ = - 8 x 1,0 = - 8,0°C

- **Комбинација температурних утицаја** / Simultaneity of uniform and temperature difference components

Ако је потребно да буде узето у обзир да температурна разлика $\Delta T_{M,heat}$ (или $\Delta T_{M,cool}$), делује истовремено са компонентом максималне равномерне температуре моста $\Delta T_{N,exp}$ (или $\Delta T_{N,con}$), могу да буду примењени следећи изрази (који треба да буду представљени као комбинације оптерећења):

If it is necessary to take into account both the temperature difference $\Delta T_{M,heat}$ (or $\Delta T_{M,cool}$) and the maximum range of uniform bridge temperature component $\Delta T_{N,exp}$ (or $\Delta T_{N,con}$) assuming simultaneity the following expression may be used (which should be interpreted as load combinations):

доминантна линеарна температурна промена: $\Delta T_{M,pos(neg)} + \omega_N \Delta T_{N,exp(con)}$ ω_N = 0,35;

доминантна равномерна температурна промена: $\omega_M \Delta T_{M,pos(neg)} + \Delta T_{N,exp(con)}$ ω_M = 0,75;

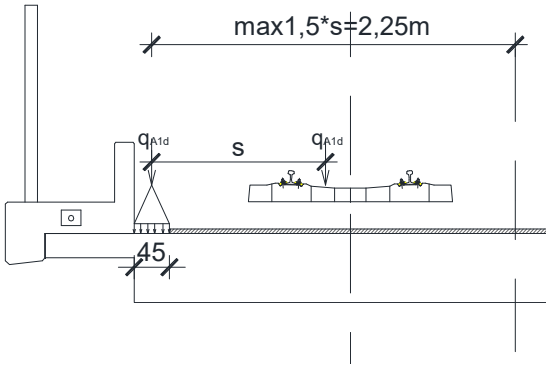
4.3 ИНЦИДЕНТНА ДЕЈСТВА / *EXIDENTAL ACTIONS*

5.3.1. Деловање од исклизнућа воза / Derailment actions from rail traffic

Утицај на конструкцију у случају исклизнућа воза узима се у обзир са две прорачунске ситуације:

Two design situations shall be considered for derailment actions from rail traffic:

ПРОРАЧУНСКА СИТУАЦИЈА I / DESIGN SITUATION I



Замењујуће оптерећење исклизнутог воза су две вертикалне силе и два континуална оптерећења следећих прорачунских вредности:

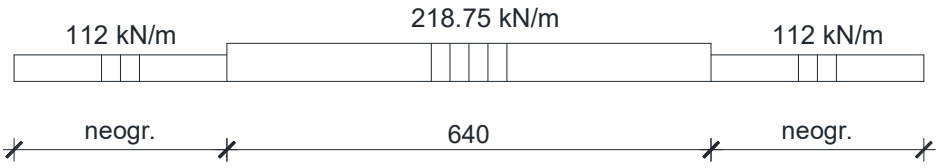
Supstitutiv actions from derailed train are two vertical forces and two linear loads:

Q_{A1d} = α*1,4*Q_{vk} (LM71) = 1,0x1,4x250 = 350 kN

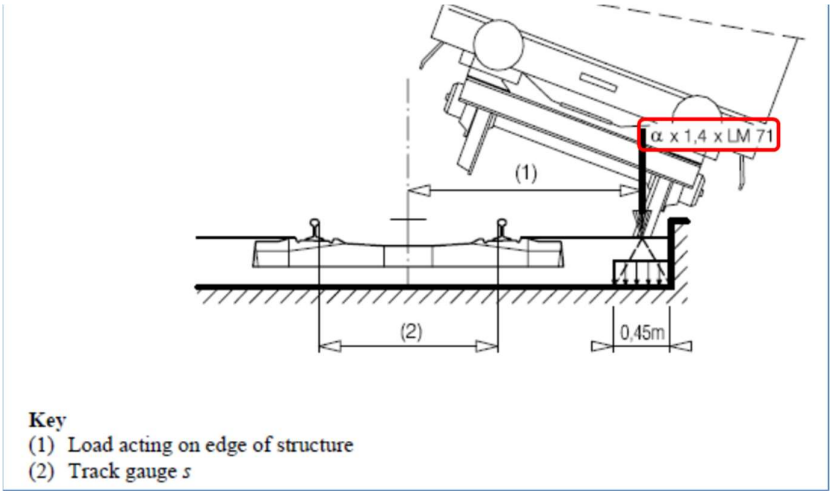
q_{A1d} = α*1,4*q_{vk} (LM71) = 1,0x1,4x80 = 112 kN/m

Узеће се поједностављена шема оптерећења / simplified sheme

на дужини 6,4m→q_{A1d}=4*350/6,4=218,75 kN/m



ПРОРАЧУНСКА СИТУАЦИЈА II / DESIGN SITUATION II



Key
(1) Load acting on edge of structure
(2) Track gauge *s*

За проверу стабилности и носивости замењујуће оптерећење је вертикално континуално оптерећење прорачунске вредности:

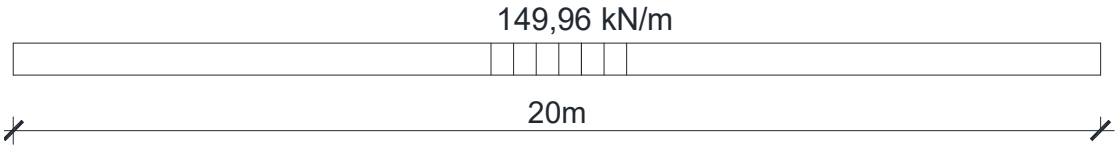
Supstitutiv actions :

Q_{uk}=4*250+(18-6,4)*80=1928kN

q_{vk}=1928/18=107,11 kN/m

q_{A1d} = 1,40 x q_{vk} (LM71) = 1,40 x 107,11 = 149,96 kN/m

Ово оптерећење се поставља уздужно на дужини од 20,0m, на највећој попречној удаљености од 1,5x(вредност ширине једног колосека) или на ивици попречног пресека конструкције у неповољном положају. Оптерећење се распростире као и за прорачунску ситуацију *I*.



Прорачунске комбинације I и II анализирају се одвојено и не узима се у обзир комбинација датих деловања.
Design Situations I and II shall be examined separately. A combination of these loads need not be considered.

5.3.2. Сеизмичко дејство / Seismic actions

Код конструкција инжењерских објеката разматрана су два карактеристична ортогонална правца деловања земљотреса: попречни и подужни. Пројектно сеизмичко оптерећење мостова одредиће се еквивалентном линеарном методом за пројектни еластични спектар одговора.

In the construction of engineering structures, two characteristic orthogonal directions of earthquake action are considered: transverse and longitudinal. The design seismic load of bridges is determined by the equivalent linear method for the design spectrum for elastic analysis.

Пројектни параметри усвојени су на основу карте сеизмичког хазарда.
The design parameters were adopted based on the seismic hazard map.

За хоризонталне компоненте сеизмичког дејства, еластични спектар одговора дефинисан је следећим изразима:

For horizontal components of seismic action, the elastic response spectrum is defined by the following expressions:

$$0 \le T \le T_B : S_e(T) = a_g * S * \left[1 + \frac{T}{T_B} * (\eta * 2{,}5 - 1)\right]$$
$$T_B \le T \le T_C : S_e(T) = a_g * S * \eta * 2{,}5$$
$$T_C \le T \le T_D : S_e(T) = a_g * S * \eta * 2{,}5 * \left[\frac{T_C}{T}\right]$$
$$T_D \le T \le 4s : S_e(T) = a_g * S * \eta * 2{,}5 * \left[\frac{T_C * T_D}{T^2}\right]$$

$S_e(T)$ еластични спектар одговора / the elastic response spectrum
T период вибрација линеарног система са једним степеном слободе / vibration period of a linear single degree of freedOITI systenl
a_g пројектно убрзање тла / design ground acceleration
T_B доња граница периода у области са константним спектралним убрзањем / is the lower limit of the period of the constant spectral acceleration branch
T_C горња граница периода у области са константним спектралним убрзањем / is the upper limit of the period of the constant spectral acceleration branch
T_D вредност периода која дефинише почетак области спектра са константним одговором померања у спектру / is the value defining the beginning of the constant displacement response range of the spectruln
S фактор тла / soil factor
η фактор корекције пригушења са референтном вредношћу η=1 за вискозно пригушење од 5% / damping correction factor with a reference value of η = 1 for 50% viscous damping,
Спектар одговора се модификује у складу са категоријама тла.
The values of the response spectrum depend upon the ground type.

Вредност параметара који описују препоручен тип 1 еластичног спектра одговора
The value of the parameters describing the recommended type 1 elastic response spectrum

таб3.2 EN 1998-1:2004

Kat. Tla	S	T_B(s)	T_C(s)	T_D(s)
A	1,00	0,15	0,40	2,00
B	1,20	0,15	0,50	2,00
C	**1,15**	**0,20**	**0,60**	**2,00**
D	1,35	0,20	0,80	2,00
E	1,40	0,15	0,50	2,00

Вредност фактора пригушења **η=1**, за релативно вискозно пригушење **ς=5%**
Damping ratio **η=1** , equivalent viscous damping ratio **ς=5%**

За вертикалне компоненте сеизмичког дејства, еластични спектар одговора дефинисан је следећим изразима:
For vertical components of seismic action, the elastic response spectrum is defined by the following expressions:

Вредности периода T_B, T_C и T_D као и фактора тла S којима се дефинише облик еластичног спектра одговора зависе од категорије тла.

The values of the periods T_B, T_C and T_D as well as the soil factors S with which the shape of the elastic response spectrum is defined depend on the soil category.

$$0 \le T \le T_B : S_{ve}(T) = a_{vg} * \left[1 + \frac{T}{T_B} * (\eta * 3{,}0 - 1)\right]$$
$$T_B \le T \le T_C : S_{ve}(T) = a_{vg} * \eta * 3{,}0$$
$$T_C \le T \le T_D : S_{ve}(T) = a_{vg} * \eta * 3{,}0 * \left[\frac{T_C}{T}\right]$$
$$T_D \le T \le 4s : S_{ve}(T) = a_{vg} * \eta * 3{,}0 * \left[\frac{T_C * T_D}{T^2}\right]$$

таб3.4 EN 1998-1:2004

spektar	a_{vg}/a_g	T_B(s)	T_C(s)	T_D(s)
Tip1	0,90	0,05	0,15	1,00
Tip2	0,45	0,05	0,15	1,00

Пројектни спектар за линерану еластичну анализу одређује се према следећим изразима:

The design spectrum for linear elastic analysis is determined according to the following expressions:

$$0 \le T \le T_B : S_d(T) = a_g * S * \left[\frac{2}{3} + \frac{T}{T_B} * \left(\frac{2{,}5}{q} - \frac{2}{3}\right)\right]$$
$$T_B \le T \le T_C : S_d(T) = a_g * S * \frac{2{,}5}{q}$$
$$T_C \le T \le T_D : S_d(T) \begin{cases} = a_g * S * \frac{2{,}5}{q} * \left[\frac{T_c}{T}\right] \\ \ge \beta * a_g \end{cases}$$
$$T_D \le T : S_d(T) \begin{cases} = a_g * S * \frac{2{,}5}{q} * \left[\frac{T_C * T_D}{T^2}\right] \\ \ge \beta * a_g \end{cases}$$

Фактор понашања **q=1.4**

Behavioral factor **q=1.4**

Сеизмичко деловање одређује се преко рачунског убрзања тла a_g, које одговара повратном периоду потреса од 475 година. Рачунско убрзање тла зависи од степена сеизмичког ризика и одређује се на темељу одговарајућих сеизмолошких испитивања локације објекта или према усвојеним вредностима за сеизмичка подручја државне територије.

Seizmic actions is determinated by the design ground acceleration, whitch corresponds to the retur period of the earthquake of the 475 years. The design groud acceleration depends on the degree of seismic risk and is determined on the basis of appropriate seismic tests of the location of the bridge or according to the adopted values for seismic areas of the state territory.

Подручје интензитета	VII.	VIII.	IX.	X.
Рачунско убрзање тла	**0,1g**	0,2g	0,3g	према посебним истраживањима

5. ГРАНИЧНА СТАЊА НОСИВОСТИ / ULTIMATE LIMIT STATES

5.1 КОМБИНАЦИЈЕ ОПТЕРЕЋЕЊА

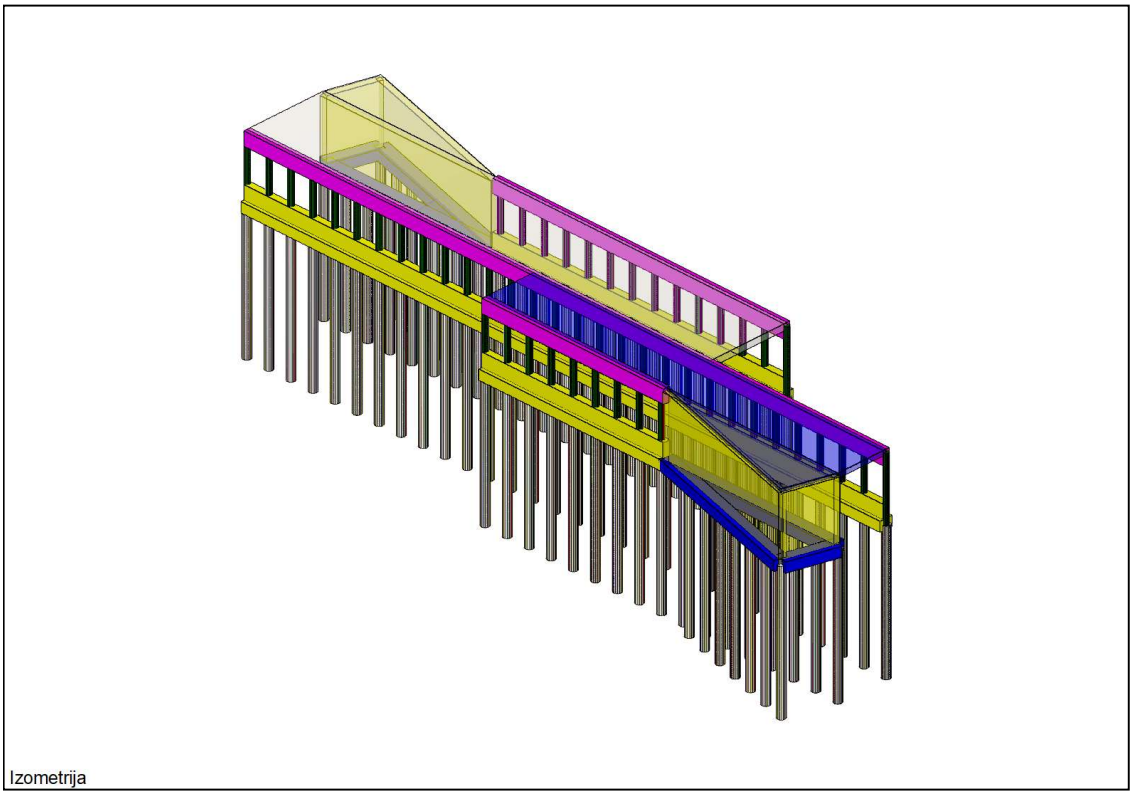
АНВ температура
KOMBT1: $(0,75Q_{dTheat}+Q_{dtexp})$
KOMBT2: $(Q_{dTheat}+0,35Q_{dtexp})$
KOMBT3: $(0,75Q_{dTheat}+Q_{dtcon})$
KOMBT4: $(Q_{dTheat}+0,35Q_{dtcon})$
KOMBT5: $(0,75Q_{dTcool}+Q_{dtexp})$
KOMBT6: $(Q_{dTcool}+0,35Q_{dtexp})$
KOMBT7: $(0,75Q_{dTcool}+Q_{dtcon})$
KOMBT8: $(Q_{dTcool}+0,35Q_{dtcon})$

1.Стална или пролазна прорачунска комбинација / Conibinations of actions for persistent or transient design situations
$\Sigma\gamma_{G,j}G_{k,j}+\gamma_P P_m+\gamma_{Qk,1}Q_{k,1}+\Sigma\ \gamma_{Qk,i}\psi_{0,i}Q_{k,i}$
KOMB1: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+1,35*G_{sk}+1,5Z+1,45Q_{uic7,l}$
KOMB2: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+1,35*G_{sk}+1,5Z+1,45Q_{uic7,l}+1,5X0,6T_6$
KOMB3: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+1,35*G_{sk}+1,5Z+1,45X0,8Q_{uic7,l}+1,5T_6$
KOMB4: $G_g+G_{dg}+G_{sk}+0,75*G_{Tc}+Z+1,45Q_{uic7,l}+1,5X0,6T_5$
KOMB5: $G_g+G_{dg}+G_{sk}+0,75*G_{Tc}+Z+1,45X0,8Q_{uic7,l}+1,5T_5$
KOMB6: $1,35G_g+1,35G_{dg}++1,33*1,35*G_{Tc}+G_{sk}+1,5Z+1,45Q_{uic7,l}+1,45xK_{uic7,1}+1,5x0,6T_3$
KOMB7: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+G_{sk}+1,5Z+1,45x0,8Q_{uic7,l}+1,45x0,8xK_{uic7,1}+1,5T_3$
KOMB8: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+1,35*G_{sk}+1,5Z+1,45Q_{uic7,l}+1,5*Vn_{iza}+1,5x0,6T_6$
KOMB9: $1,35G_g+1,35G_{dg}++1,33*1,35*G_{Tc}+1,35*G_{sk}+1,5Z+1,45x0,8Q_{uic7,l}+1,5x0,8Vn_{iza}+1,5T_6$
KOMB10: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+1,35*G_{sk}+Z+1,45Q_{uic7,l}-1,45xK_{uic7,}1+1,5X0,6T_5$
KOMB11: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+1,35*G_{sk}+Z+1,45x0,8Q_{uic7,l}-1,45x0,8K_{uic7,1}+1,5T_5$
KOMB12: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+1,35*G_{sk}+Z+1,45Q_{uic7,l}-1,45xK_{uic7,1}+1,5*Vn_{iza}+1,5X0,6T_2$
KOMB13: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+1,35*G_{sk}+Z+1,45x0,8Q_{uic7,l}-1,45x0,8K_{uic7,1}+1,5*Vn_{iza}+1,5T_2$
KOMB14: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+G_{sk}+1.5Z+1,45Q_{uic7,l}+1,45xK_{uic7,}1+1,5X0,6T_5$
KOMB15: $1,35G_g+1,35G_{dg}+1,33*1,35*G_{Tc}+G_{sk}+1.5Z+1,45x0,8Q_{uic7,l}+1,45x0,8K_{uic7,1}+1,5T_5$
KOMB16: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+1.5Z+1,45Q_{uic7,l}-1,45xK_{uic7,1}+1,5*Vn_{iza}+1,5X0,6T_1$
KOMB17: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+1.5Z+1,45x0,8Q_{uic7,l}-1,45x0,8K_{uic7,1}+1,5x0,8Vn_{iza}+1,5T_1$

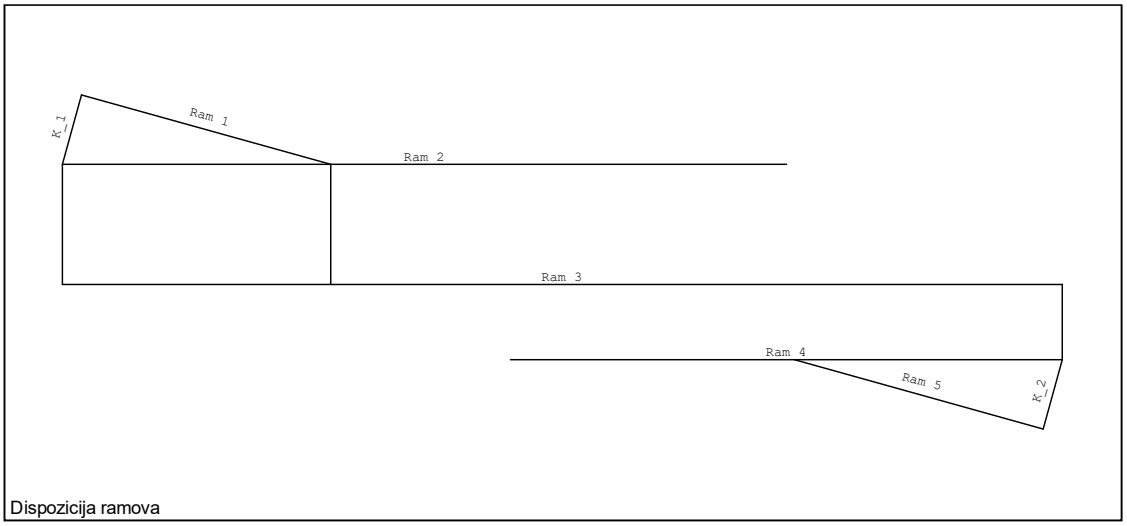
Сеизмичка прорачунска ситуација / Combinations of actions for seismic design situations
$\Sigma G_{k,j}+P_k+\gamma_1 A_{Ed}+\psi_{2,1}Q_{1,k}+\Sigma\ \psi_{2,i}Q_{k,i}$
Објекат је окарактерисан као мост са тешким саобраћајем, према EN 1998-2:2005, део 4.1.2(4)P $\psi_{2,1}=0,3$ / Bridges with severe traffic, according to EN 1998-2:2005, part 4.1.2(4)P $\psi_{2,1}=0,3$
Коефицијент значаја $\gamma_1=1$, према EN 1998-2:2005, део 2.1 / The importance factor $\gamma_1=1$, according to EN 1998-2:2005, part 2.1
KOMB18: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}-K_{uic7,1}+Vn_{iza})+0,5T_8+S_x+0,3S_y$
KOMB19: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}-K_{uic7,1}+Vn_{iza})+0,5T_8-S_x-0,3S_y$
KOMB20: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}+K_{uic7,1}+Vn_{isp})+0,5T_6+S_x+0,3S_y$
KOMB21: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}+K_{uic7,1}+Vn_{isp})+0,5T_6-S_x-0,3S_y$
KOMB22: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}+K_{uic7,1}+Vn_{isp}+V_{ispod})+0,5T_4+S_x+0,3S_y$
KOMB23: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}+K_{uic7,1}+Vn_{isp}+V_{ispod})+0,5T_4-S_x-0,3S_y$
KOMB24: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}-K_{uic7,1}+Vn_{isp})+0,5T_7+S_x+0,3S_y$
KOMB25: $G_g+G_{dg}+0,75*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}-K_{uic7,1}+Vn_{isp})+0,5T_7-S_x-0,3S_y$

KOMB18-1: $G_g+G_{dg}+1,33*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}-K_{uic7,1}+Vn_{iza})+0,5T_8+S_x+0,3S_y$
KOMB19-1: $G_g+G_{dg}+1,33*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}-K_{uic7,1}+Vn_{iza})+0,5T_8-S_x-0,3S_y$
KOMB20-1: $G_g+G_{dg}+1,33*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}+K_{uic7,1}+Vn_{isp})+0,5T_6+S_x+0,3S_y$
KOMB21-1: $G_g+G_{dg}+1,33*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}+K_{uic7,1}+Vn_{isp})+0,5T_6-S_x-0,3S_y$
KOMB22-1: $G_g+G_{dg}+1,33*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}+K_{uic7,1}+Vn_{isp}+V_{ispod})+0,5T_4+S_x+0,3S_y$
KOMB23-1: $G_g+G_{dg}+1,33*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}+K_{uic7,1}+Vn_{isp}+V_{ispod})+0,5T_4-S_x-0,3S_y$
KOMB24-1: $G_g+G_{dg}+1,33*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}-K_{uic7,1}+Vn_{isp})+0,5T_7+S_x+0,3S_y$
KOMB25-1: $G_g+G_{dg}+1,33*G_{Tc}+G_{sk}+Z+0,3(Q_{uic7,l}-K_{uic7,1}+Vn_{isp})+0,5T_7-S_x-0,3S_y$

5.2 УЛАЗНИ ПОДАЦИ



Izometrija



Dispozicija ramova

Šema nivoa

Naziv	z [m]	h [m]
Ravan ploče 70cm	9.75	6.90
Vrh parapeta	2.85	2.85

Naglavne grede	0.00	20.75
Dno šipova	-20.75	

Tabela materijala

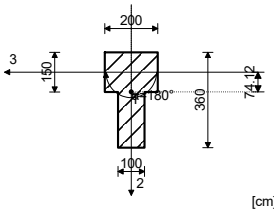
No	Naziv materijala	E[kN/m2]	μ	γ[kN/m3]	αt[1/C]	Em[kN/m2]	μm
1	C 35/45	3.400e+7	0.20	25.00	1.000e-5	3.400e+7	0.20
2	C 30/37	3.300e+7	0.20	25.00	1.000e-5	3.300e+7	0.20

Setovi ploča

No	d[m]	e[m]	Materijal	Tip proračuna	Ortotropija	E2[kN/m2]	G[kN/m2]	α
<1>	1.000	0.350	1	Tanka ploča	Izotropna			
<2>	0.700	0.350	1	Tanka ploča	Izotropna			
<3>	0.950	0.350	1	Tanka ploča	Izotropna			

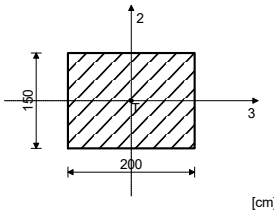
Setovi greda

Set: 1 Presek: T 200/360, Fiktivna ekscentričnost



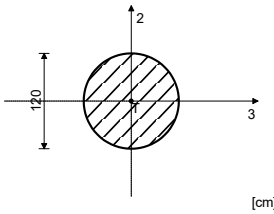
Mat.	A1	A2	A3	I1	I2	I3
2 - C 30/37	5.100e+0	3.795e+0	4.689e+0	2.950e+0	1.175e+0	5.337e+0

Set: 2 Presek: b/d=200/150, Fiktivna ekscentričnost



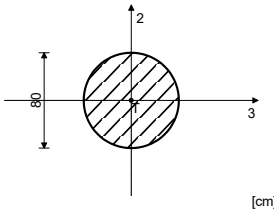
Mat.	A1	A2	A3	I1	I2	I3
2 - C 30/37	3.000e+0	2.500e+0	2.500e+0	1.215e+0	1.000e+0	5.625e-1

Set: 3 Presek: D=120, Fiktivna ekscentričnost



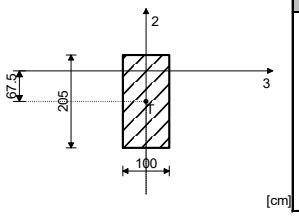
Mat.	A1	A2	A3	I1	I2	I3
2 - C 30/37	1.131e+0	1.018e+0	1.018e+0	2.036e-1	1.018e-1	1.018e-1

Set: 4 Presek: D=80, Fiktivna ekscentričnost



Mat.	A1	A2	A3	I1	I2	I3
1 - C 35/45	5.027e-1	4.524e-1	4.524e-1	4.021e-2	2.011e-2	2.011e-2

Set: 5 Presek: b/d=100/205, Fiktivna ekscentričnost



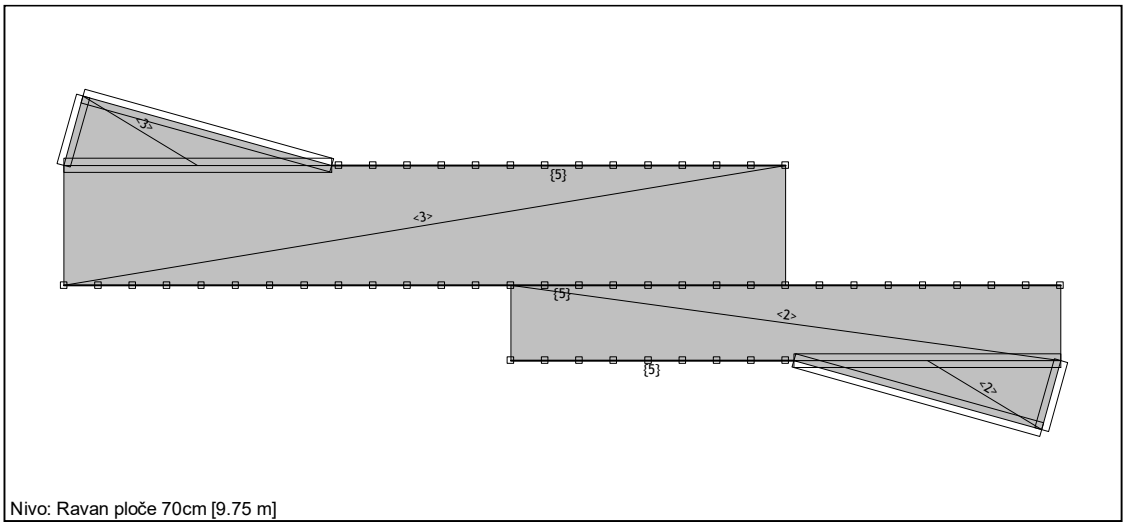
Mat.	A1	A2	A3	I1	I2	I3
1 - C 35/45	2.050e+0	1.708e+0	1.708e+0	4.743e-1	1.708e-1	7.179e-1

Setovi linijskih oslonaca

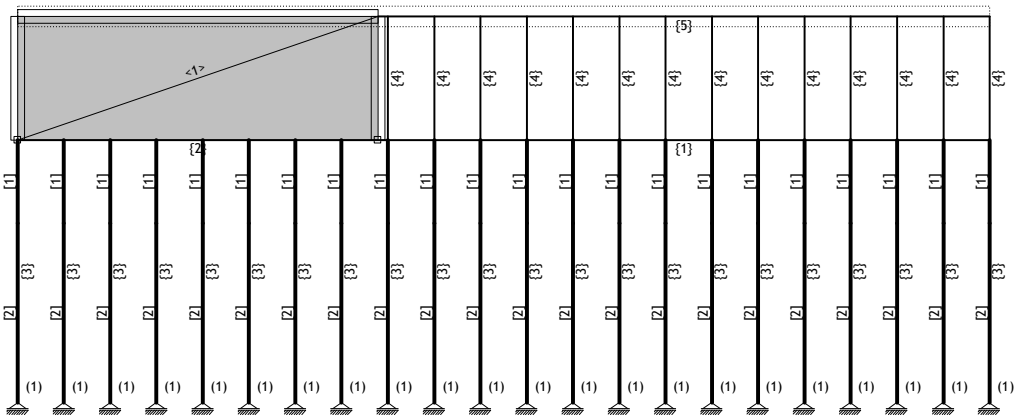
Set	K,R1	K,R2	K,R3	K,M1	Tlo [m]
1		1.085e+4	1.085e+4		
2		1.440e+4	1.440e+4		

Setovi tačkastih oslonaca

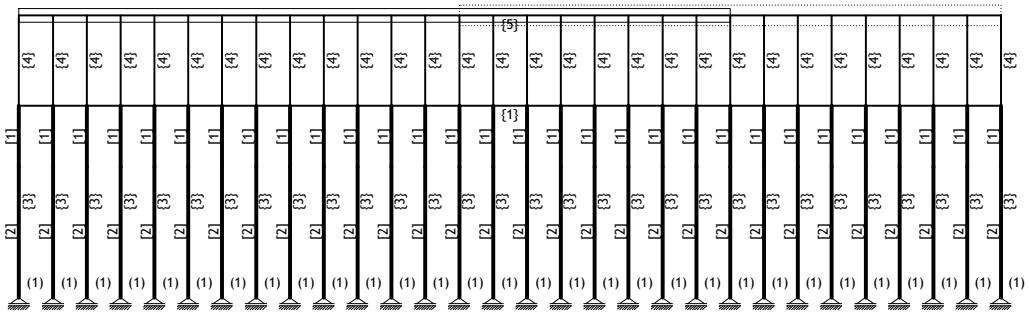
Set	K,R1	K,R2	K,R3	K,M1	K,M2	K,M3
1			1.000e+5			



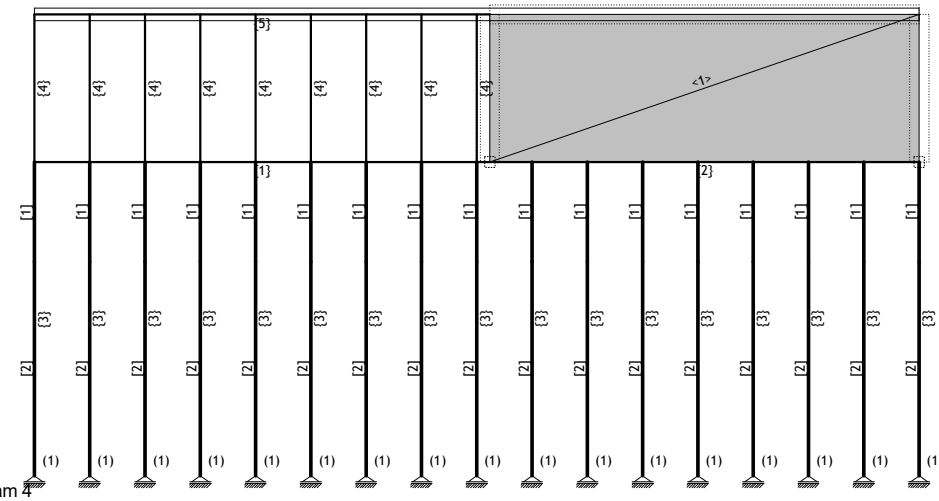
Nivo: Ravan ploče 70cm [9.75 m]



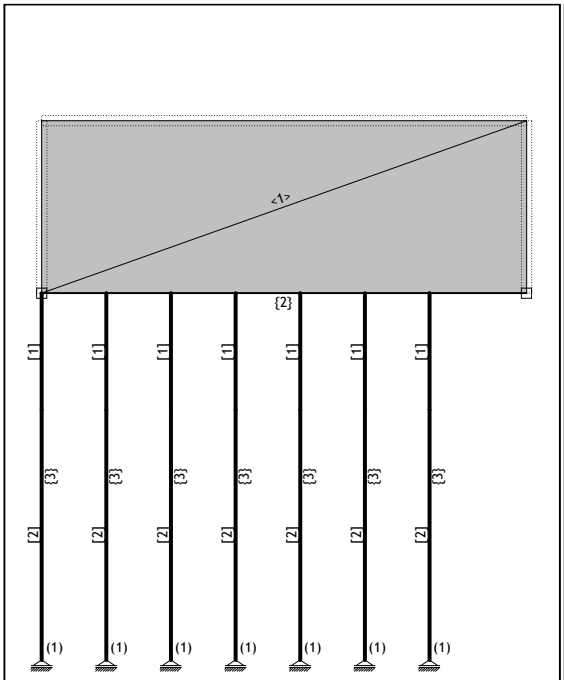
Ram: Ram 2



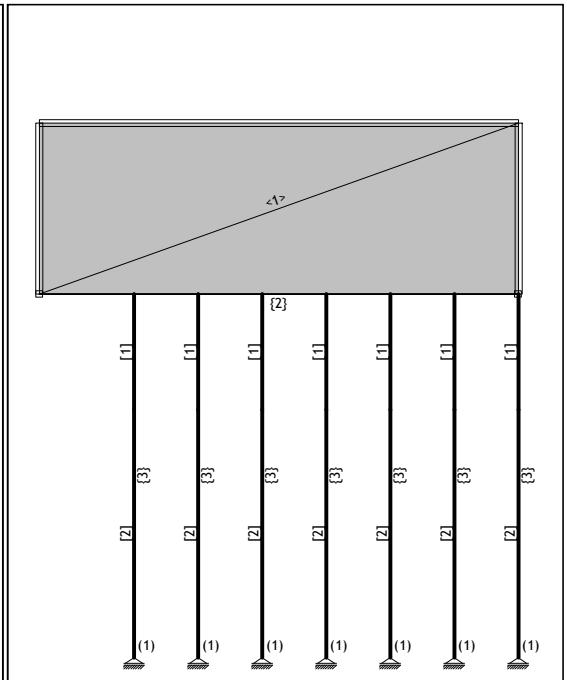
Ram: Ram 3



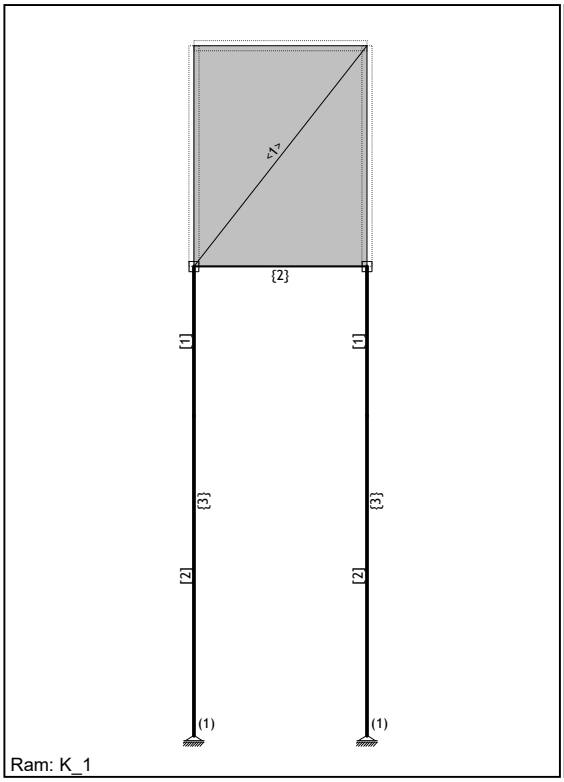
Ram: Ram 4



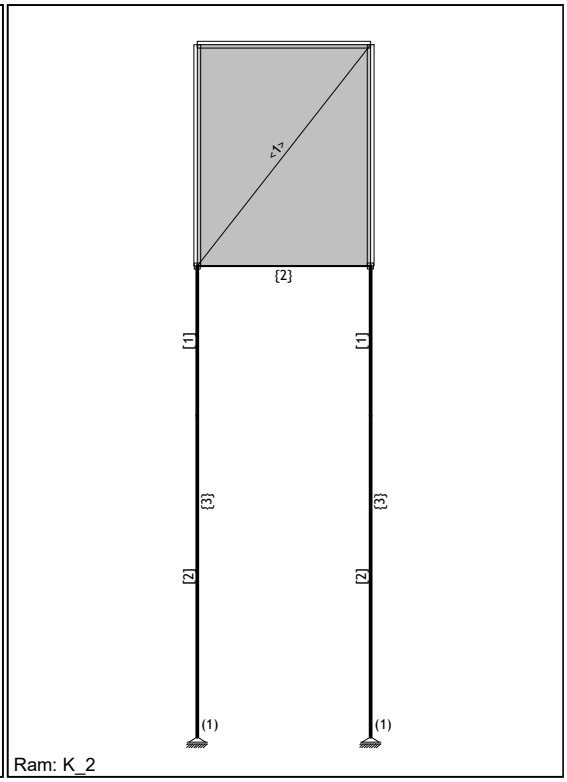
Ram: Ram 1



Ram: Ram 5



Ram: K_1



Ram: K_2

5.3 МОДАЛНА АНАЛИЗА

Modalna analiza

Napredne opcije seizmičkog proračuna:

Multiplikator krutosti oslonaca: 5.000
Sprečeno oscilovanje u Z pravcu

Faktori opterećenja za proračun masa

No	Naziv	Koeficijent
1	sopstvena tezina (g)	1.00
2	mrtav teret (Δg)	1.00
3	horizontalan pritisak tla	1.00
4	skupljanje	0.00
5	LM71	0.00
6	SW/2	0.00
7	KP	0.00
8	voz na nasipu ispred	0.00
9	voz na nasipu iza	0.00
10	voz ispod	0.00
11	komb temp 1	0.00
12	komb temp 2	0.00
13	komb temp 3	0.00
14	komb temp 4	0.00
15	komb temp 5	0.00
16	komb temp 6	0.00
17	komb temp 7	0.00
18	komb temp 8	0.00
19	BU	0.00
20	tucanik	1.00

Raspored masa po visini objekta

Nivo	Z [m]	X [m]	Y [m]	Masa [T]	T/m²
Ravan ploče 70cm	9.75	52.13	2.63	8845.19	5.35
Vrh parapeta	2.85	52.88	2.40	1574.83	
Naglavne grede	0.00	53.89	2.15	6652.95	
Dno šipova	-20.75	53.91	2.14	2479.15	
Ukupno:	2.01	53.01	2.39	19552.11	

Položaj centara krutosti po visini objekta (približna metoda)

Nivo	Z [m]	X [m]	Y [m]
Ravan ploče 70cm	9.75	54.47	2.01
Vrh parapeta	2.85	54.47	2.01
Naglavne grede	0.00	53.98	2.13
Dno šipova	-20.75	53.91	2.14

Ekscentricitet po visini objekta (približna metoda)

Nivo	Z [m]	eox [m]	eoy [m]
Ravan ploče 70cm	9.75	2.35	0.62
Vrh parapeta	2.85	1.59	0.39
Naglavne grede	0.00	0.09	0.02
Dno šipova	-20.75	0.00	0.00

Periodi oscilovanja konstrukcije

No	T [s]	f [Hz]
1	0.6005	1.6652
2	0.4359	2.2942
3	0.2967	3.3704
4	0.2337	4.2793
5	0.1447	6.9095

5.4 СЕИЗМИЧКИ ПРОРАЧУН

Seizmički proračun

Seizmički proračun: EC8 (EN 1998)

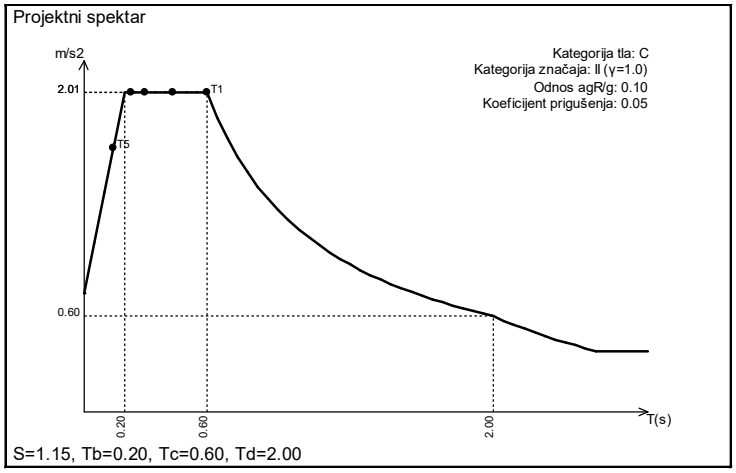
Kategorija tla:	C
Kategorija značaja:	II (γ=1.0)
Odnos agR/g:	0.10
Koeficijent prigušenja:	0.05

Faktori pravca zemljotresa:

Slučaj opterećenja	Ugao α[°]	k,α	k,α+90°	kz	Faktor q
Sx	0	1.000	0.000	0.000	1.400
Sy	90	1.000	0.000	0.000	1.400

Tip spektra

Slučaj opterećenja	S	Tb	Tc	Td	avg/ag
Sx	1.150	0.200	0.600	2.000	1.000
Sy	1.150	0.200	0.600	2.000	1.000



Raspored seizmičkih sila po visini objekta - Sx

Nivo	Z [m]	Ton 1			Ton 2			Ton 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Ravan ploče 70cm	9.75	348.49	2488.3	20.94	3.18	-5.30	-8.17	14466	-2294.30	-105.21
Vrh parapeta	2.85	21.86	236.60	1.00	0.13	-1.38	0.31	1491.6	-1051.81	4.60
Naglavne grede	0.00	21.08	237.27	-0.11	0.14	-0.28	0.14	2528.0	-740.46	-1.83
Dno šipova	-20.75	-0.15	-1.56	-0.00	-0.00	0.00	-0.00	-22.88	6.04	-0.00
	Σ=	391.28	2960.7	21.83	3.45	-6.96	-7.71	18463	-4080.52	-102.43

Nivo	Z [m]	Ton 4			Ton 5		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Ravan ploče 70cm	9.75	3970.0	-142.19	0.21	7.80	-5.25	8.45
Vrh parapeta	2.85	1026.1	799.34	1.15	16.11	7.76	-1.24
Naglavne grede	0.00	1435.7	253.60	0.98	29.21	7.68	0.73
Dno šipova	-20.75	-13.02	-2.22	0.00	-0.28	-0.07	0.00
	Σ=	6418.7	908.52	2.34	52.84	10.13	7.93

Raspored seizmičkih sila po visini objekta - Sy

Nivo	Z [m]	Ton 1			Ton 2			Ton 3		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Ravan ploče 70cm	9.75	2636.9	18828	158.43	-6.40	10.69	16.46	-3197.19	507.08	23.25
Vrh parapeta	2.85	165.41	1790.2	7.58	-0.27	2.78	-0.63	-329.66	232.47	-1.02
Naglavne grede	0.00	159.51	1795.3	-0.84	-0.29	0.56	-0.29	-558.74	163.65	0.40
Dno šipova	-20.75	-1.17	-11.79	-0.00	0.00	-0.01	0.00	5.06	-1.34	0.00
	Σ=	2960.7	22402	165.16	-6.96	14.03	15.55	-4080.52	901.86	22.64

Nivo	Z [m]	Ton 4			Ton 5		
		Px [kN]	Py [kN]	Pz [kN]	Px [kN]	Py [kN]	Pz [kN]
Ravan ploče 70cm	9.75	561.92	-20.13	0.03	1.50	-1.01	1.62
Vrh parapeta	2.85	145.23	113.14	0.16	3.09	1.49	-0.24
Naglavne grede	0.00	203.21	35.90	0.14	5.60	1.47	0.14
Dno šipova	-20.75	-1.84	-0.31	0.00	-0.05	-0.01	0.00
	Σ=	908.52	128.60	0.33	10.13	1.94	1.52

Faktori participacije - relativno učešće

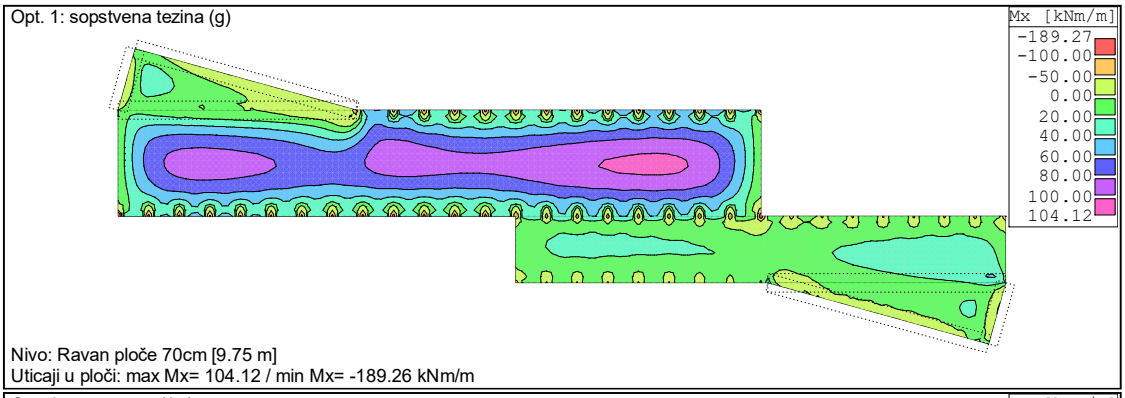
Ton \ Naziv	1. Sx	2. Sy
1	0.015	0.955
2	0.000	0.001
3	0.729	0.038
4	0.253	0.005
5	0.002	0.000

Faktori participacije - angažovanje mase

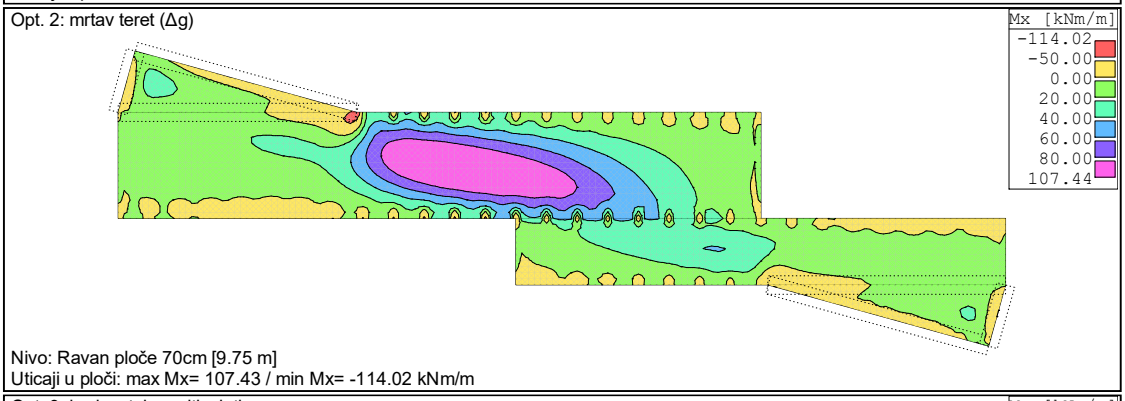
Ton	U [α=0°]	U [α=90°]
1	1.69	92.33
2	0.02	0.07
3	73.16	3.41
4	22.09	0.49
5	0.09	0.00
ΣU (%)	97.04	96.31

5.5 УТИЦАЈИ У ЕЛЕМЕНТИМА КОНСТРУКЦИЈЕ

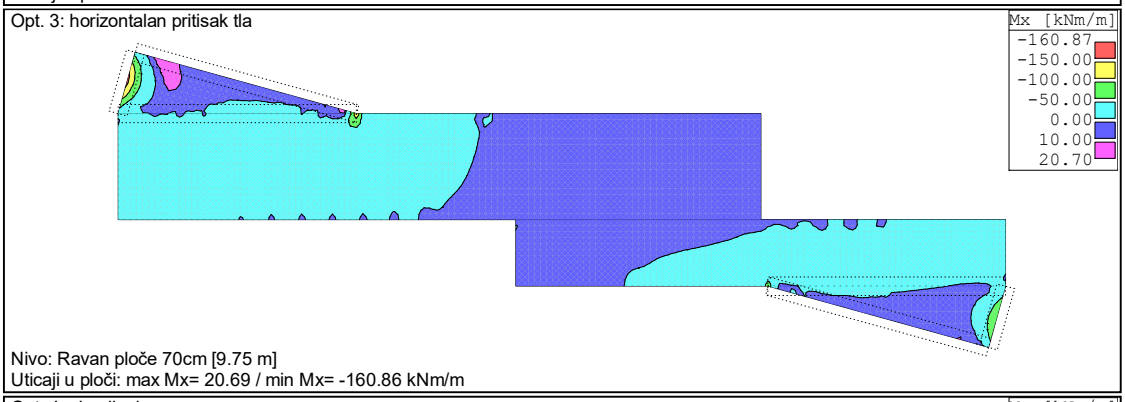
5.5.1 Плоче



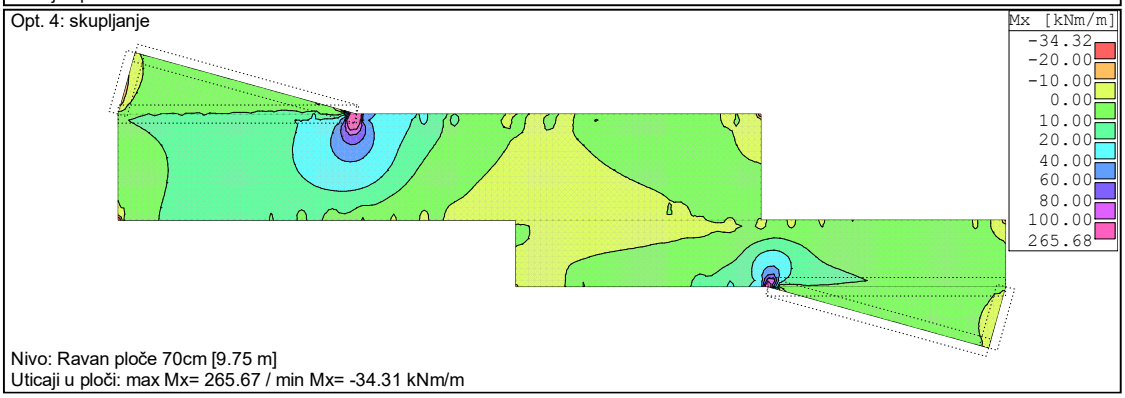
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 104.12 / min Mx= -189.26 kNm/m



Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 107.43 / min Mx= -114.02 kNm/m

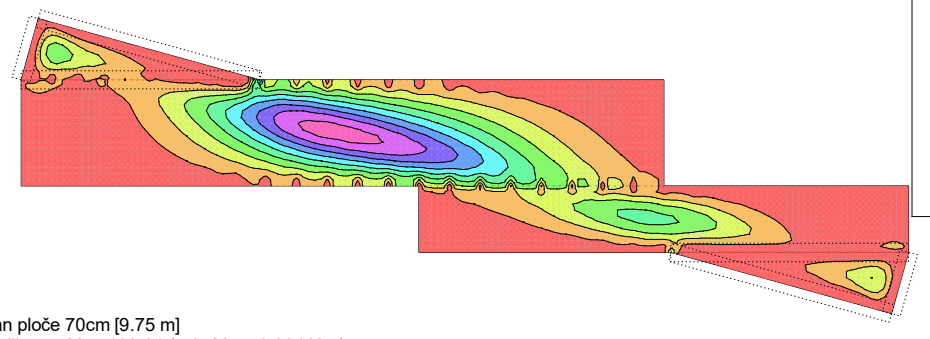


Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 20.69 / min Mx= -160.86 kNm/m



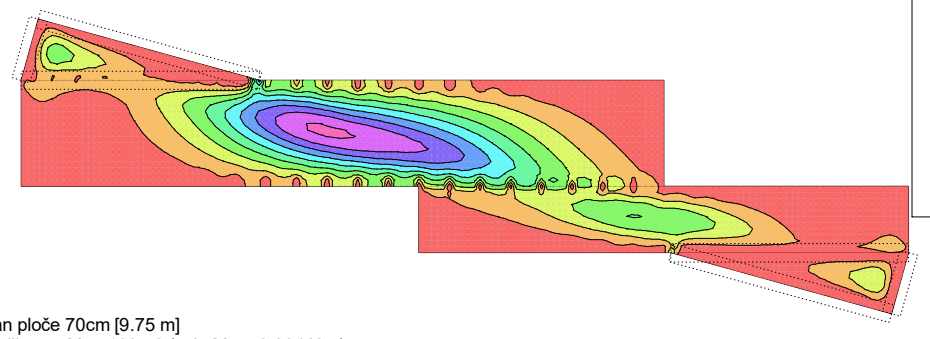
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 265.67 / min Mx= -34.31 kNm/m

Opt. 5: LM71



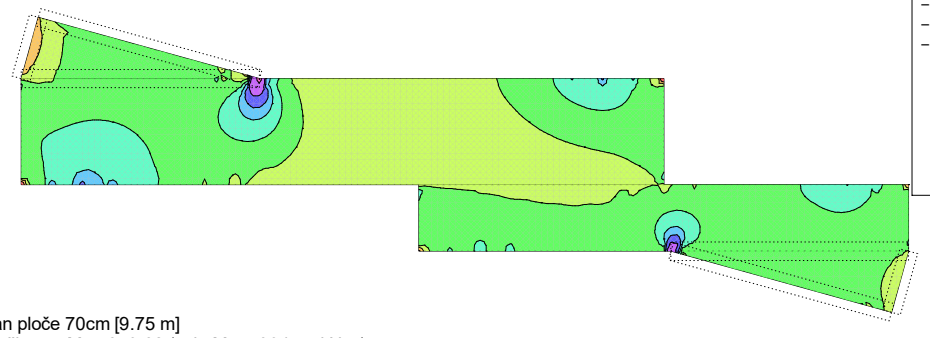
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 188.61 / min Mx= -0.00 kNm/m

Opt. 6: SW/2



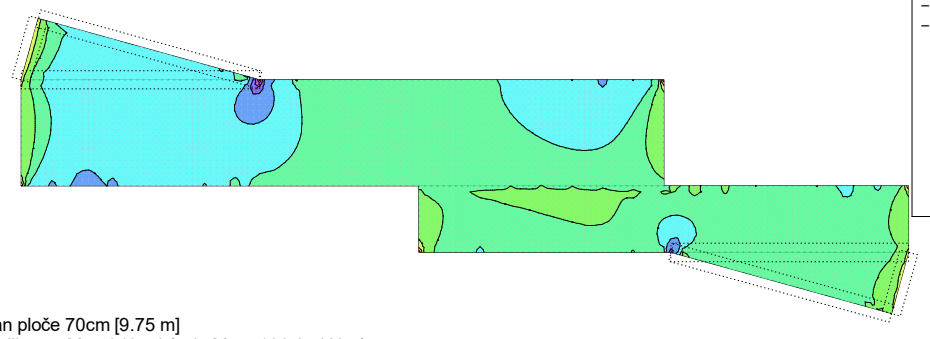
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 183.76 / min Mx= -0.00 kNm/m

Opt. 11: komb temp 1



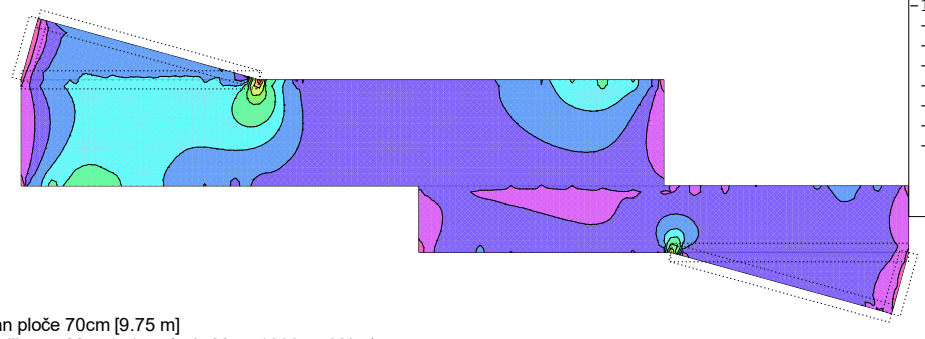
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 850.62 / min Mx= -394.57 kNm/m

Opt. 12: komb temp 2



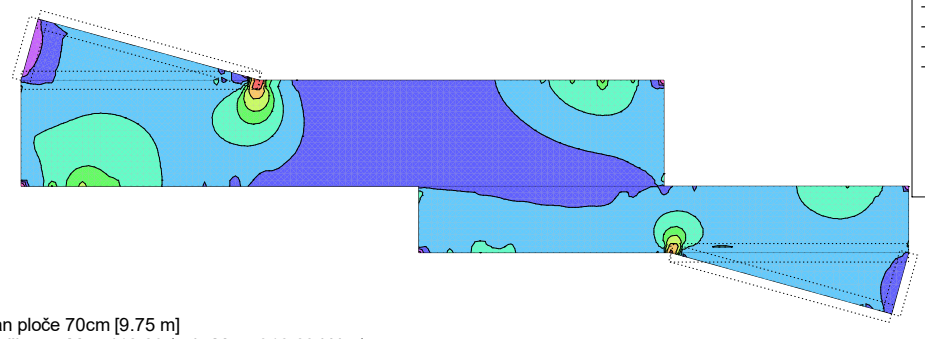
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 949.74 / min Mx= -136.85 kNm/m

Opt. 13: komb temp 3



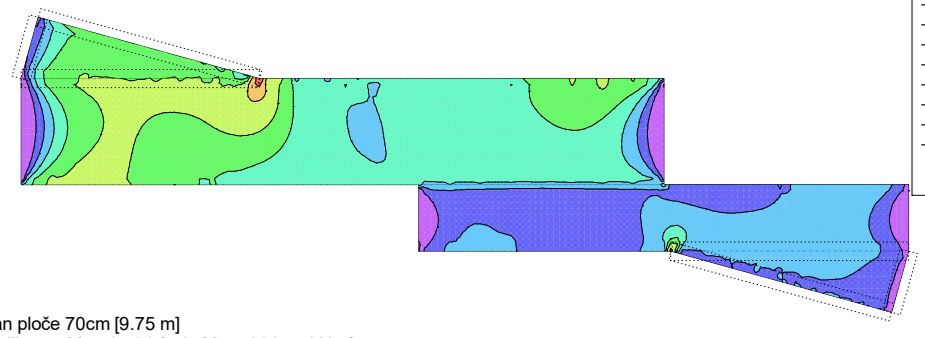
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 154.57 / min Mx= -1009.75 kNm/m

Opt. 14: komb temp 4



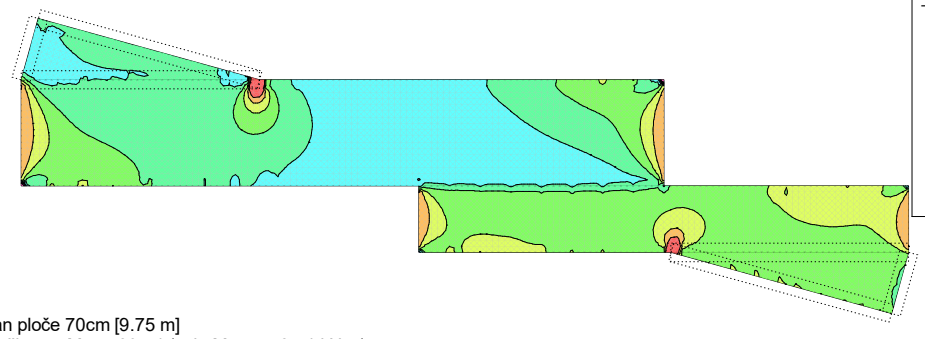
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 412.29 / min Mx= -910.63 kNm/m

Opt. 15: komb temp 5



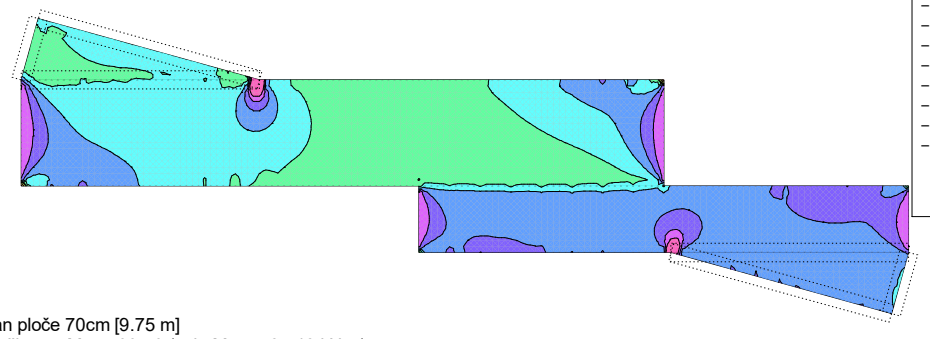
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 17.01 / min Mx= -861.75 kNm/m

Opt. 16: komb temp 6



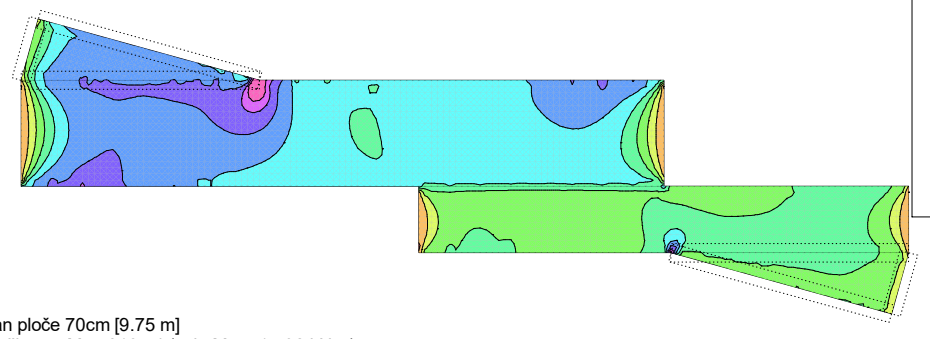
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 580.74 / min Mx= -578.54 kNm/m

Opt. 17: komb temp 7



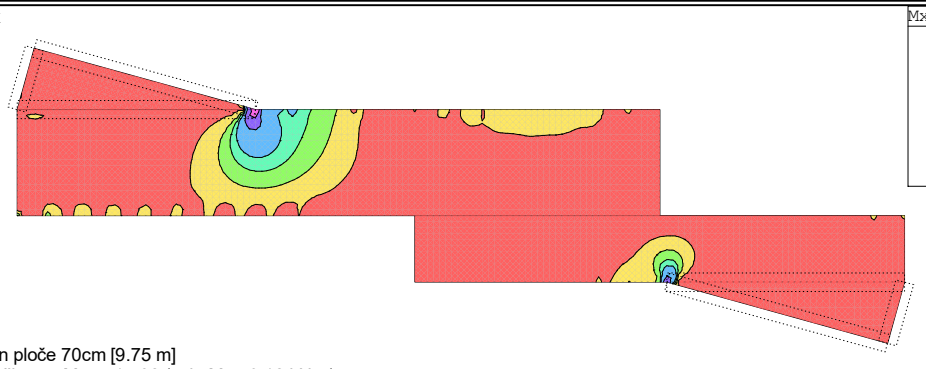
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 533.53 / min Mx= -567.46 kNm/m

Opt. 18: komb temp 8



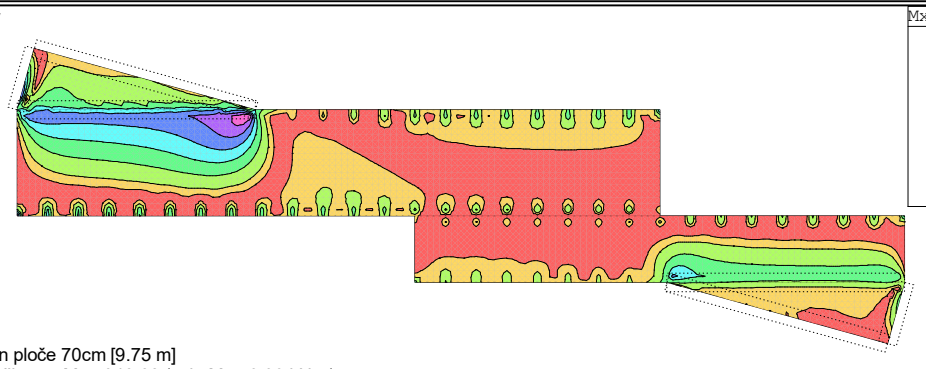
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 816.74 / min Mx= -15.32 kNm/m

Opt. 20: Sx



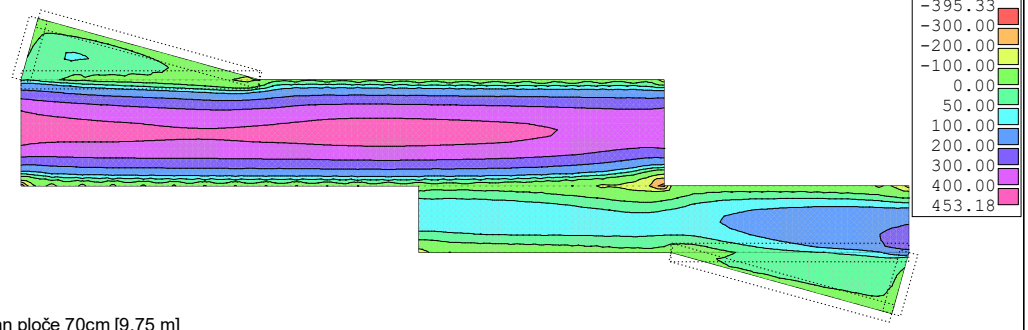
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 715.82 / min Mx= 0.12 kNm/m

Opt. 21: Sy



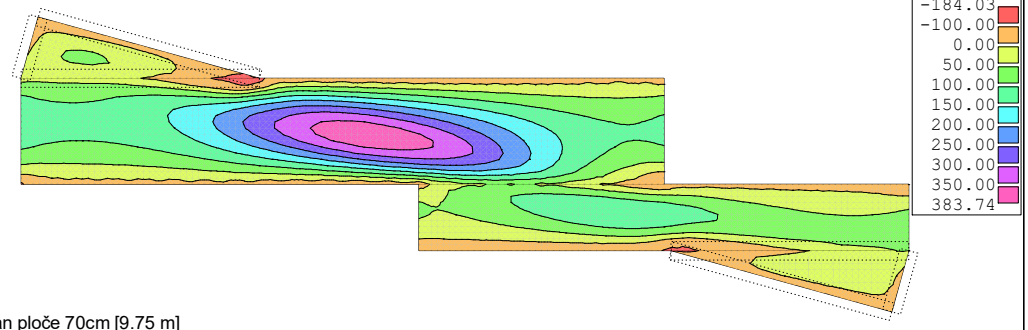
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mx= 346.68 / min Mx= 0.09 kNm/m

Opt. 1: sopstvena tezina (g)



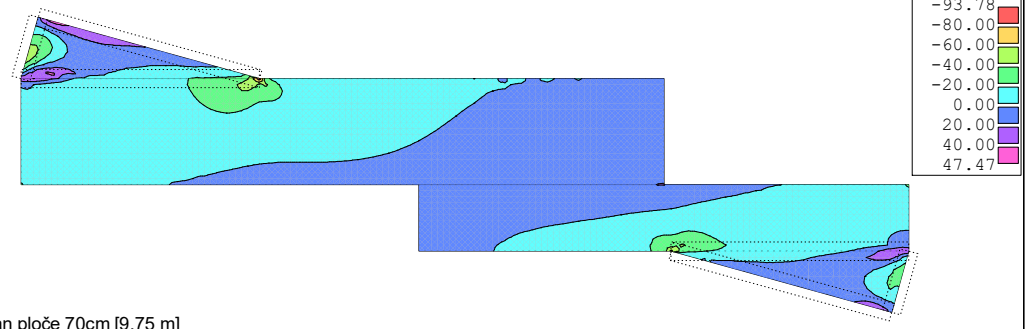
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 453.17 / min My= -395.32 kNm/m

Opt. 2: mrtav teret (Δg)



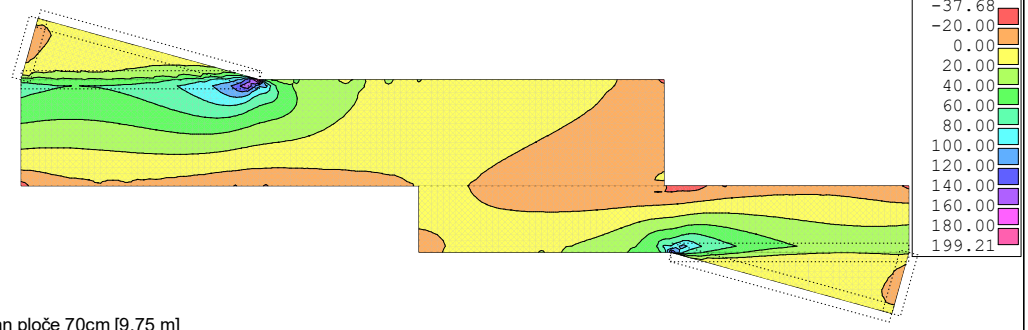
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 383.73 / min My= -184.02 kNm/m

Opt. 3: horizontalan pritisak tla



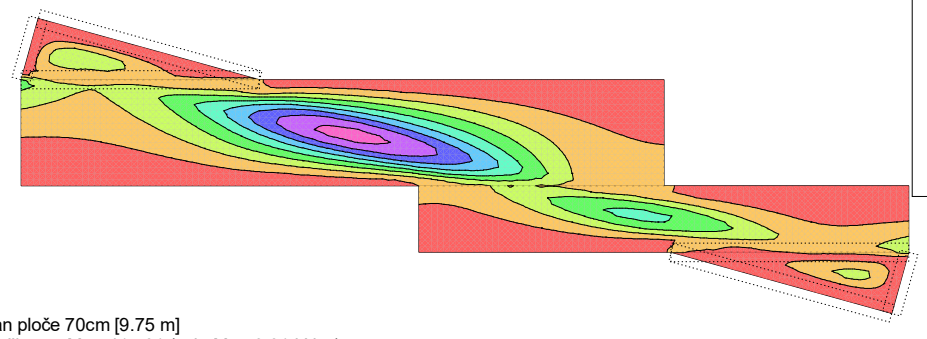
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 47.46 / min My= -93.77 kNm/m

Opt. 4: skupljanje



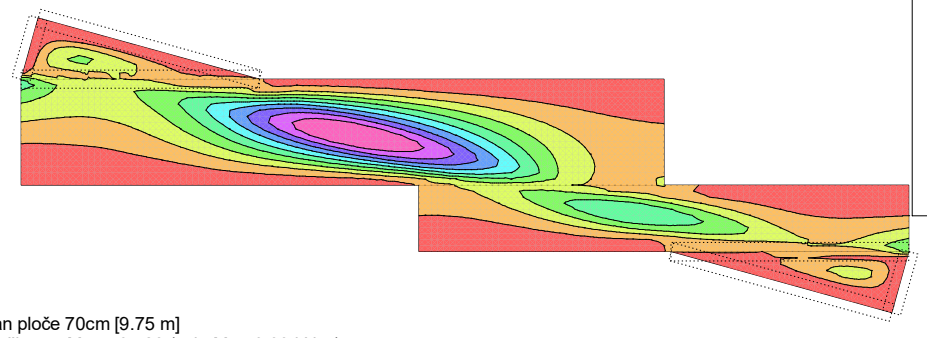
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 199.20 / min My= -37.67 kNm/m

Opt. 5: LM71



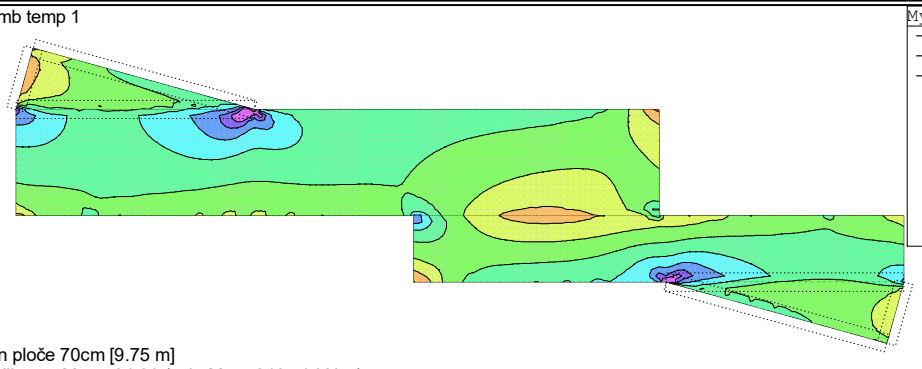
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 415.61 / min My= 0.01 kNm/m

Opt. 6: SW/2



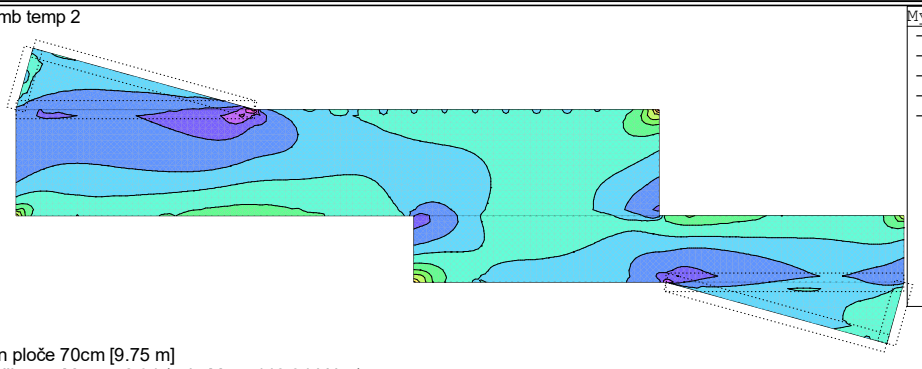
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 505.28 / min My= 0.00 kNm/m

Opt. 11: komb temp 1



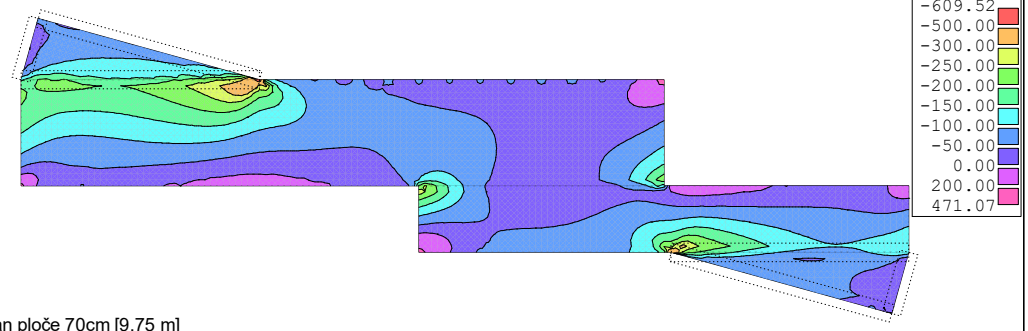
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 524.26 / min My= -242.70 kNm/m

Opt. 12: komb temp 2



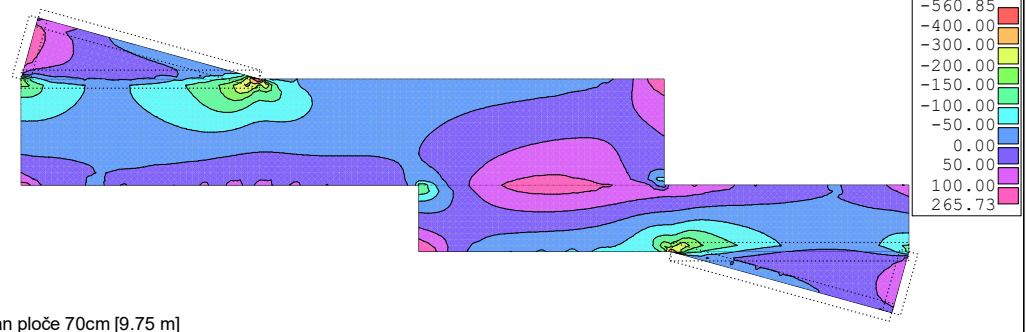
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 572.94 / min My= -448.04 kNm/m

Opt. 13: komb temp 3



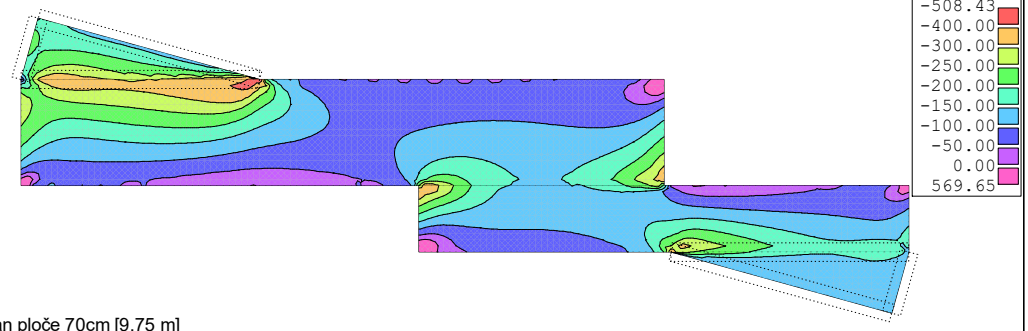
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 471.06 / min My= -609.51 kNm/m

Opt. 14: komb temp 4



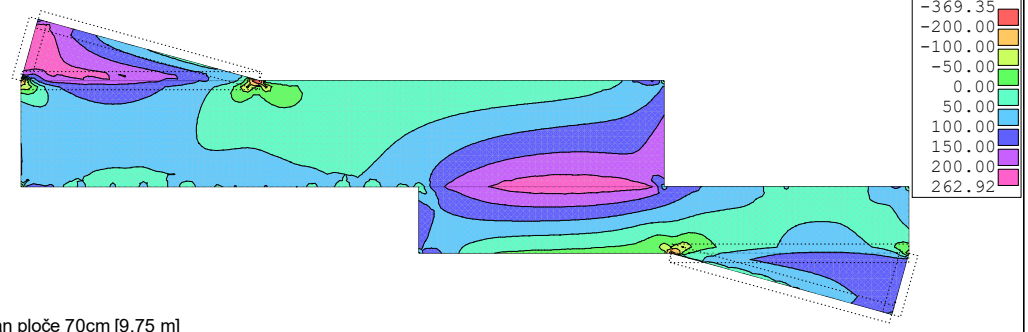
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 265.72 / min My= -560.84 kNm/m

Opt. 15: komb temp 5



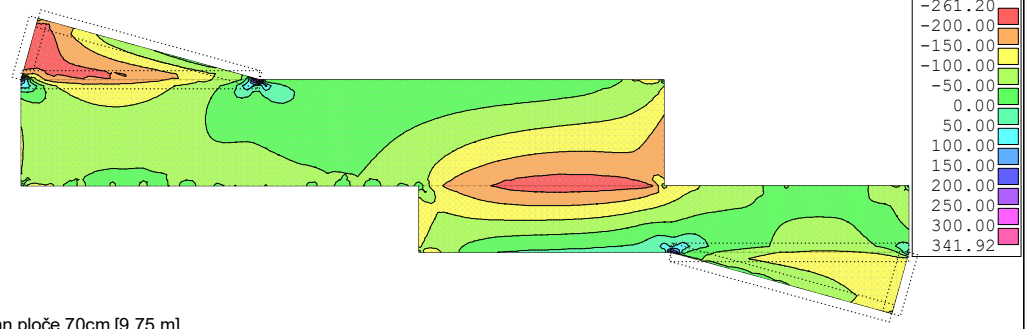
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 569.64 / min My= -508.42 kNm/m

Opt. 16: komb temp 6



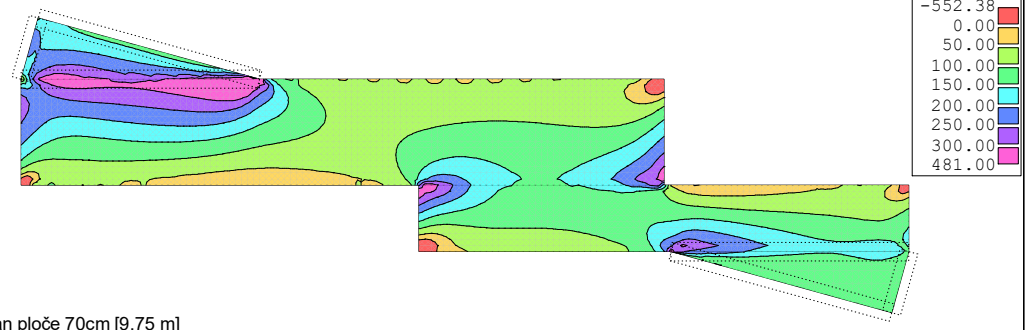
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 262.91 / min My= -369.34 kNm/m

Opt. 17: komb temp 7



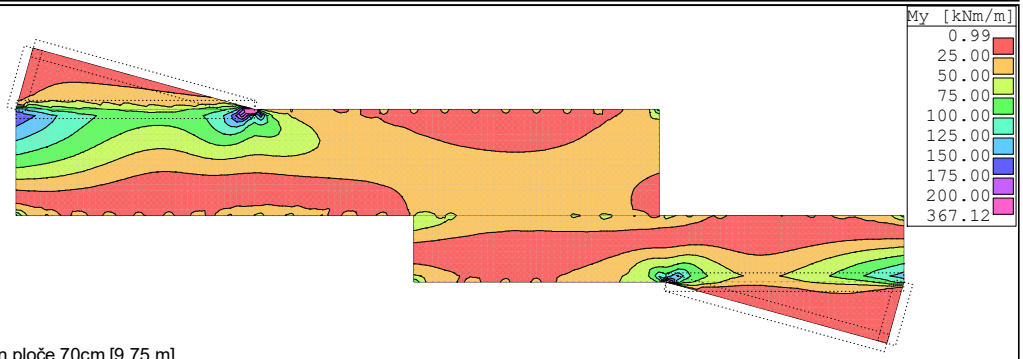
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 341.91 / min My= -261.19 kNm/m

Opt. 18: komb temp 8



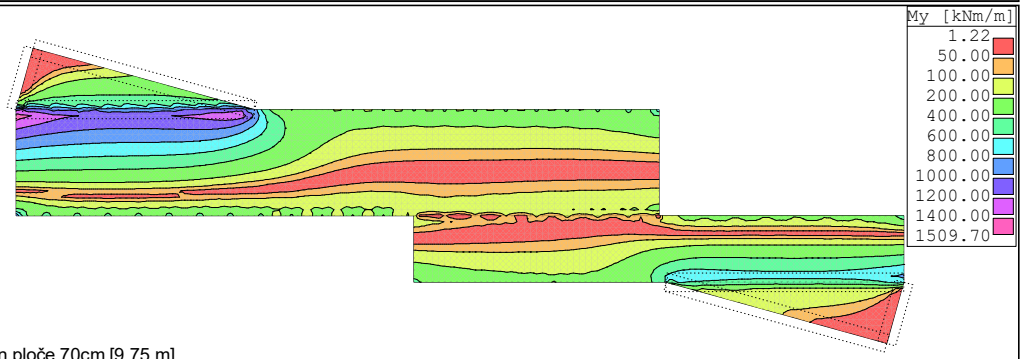
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 480.99 / min My= -552.37 kNm/m

Opt. 20: Sx



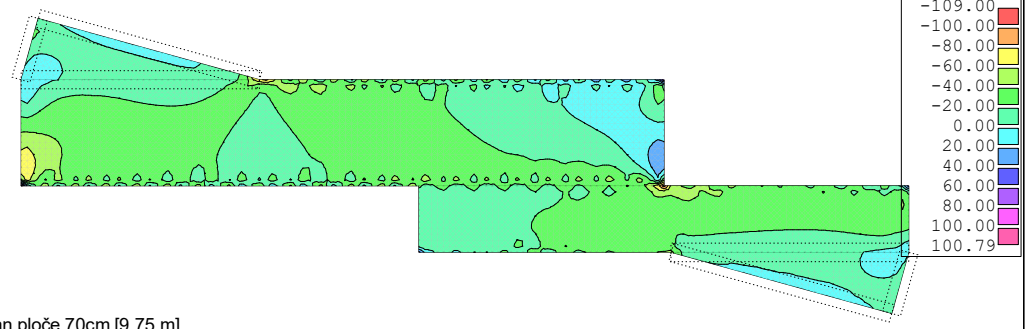
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 367.11 / min My= 1.00 kNm/m

Opt. 21: Sy



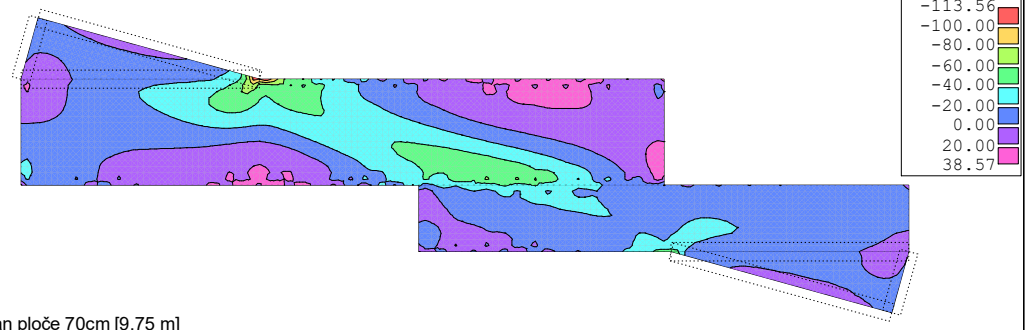
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max My= 1509.69 / min My= 1.23 kNm/m

Opt. 1: sopstvena tezina (g)



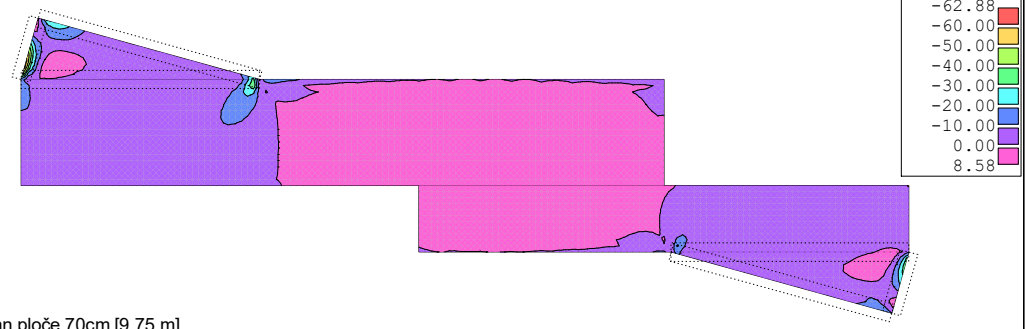
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 100.78 / min Mxy= -108.99 kNm/m

Opt. 2: mrtav teret (Δg)



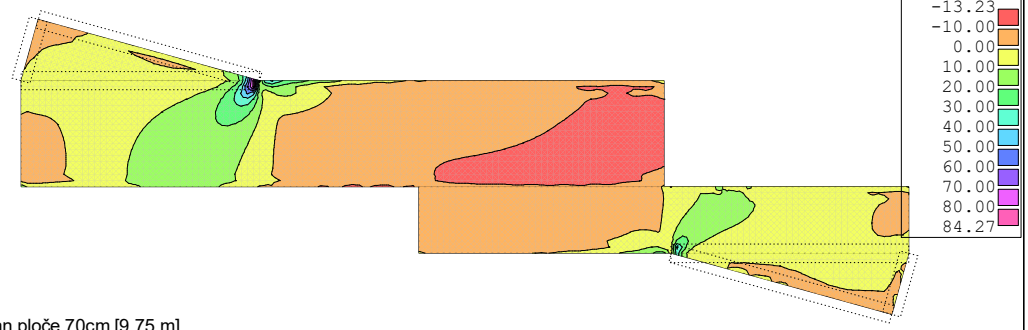
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 38.56 / min Mxy= -113.55 kNm/m

Opt. 3: horizontalan pritisak tla



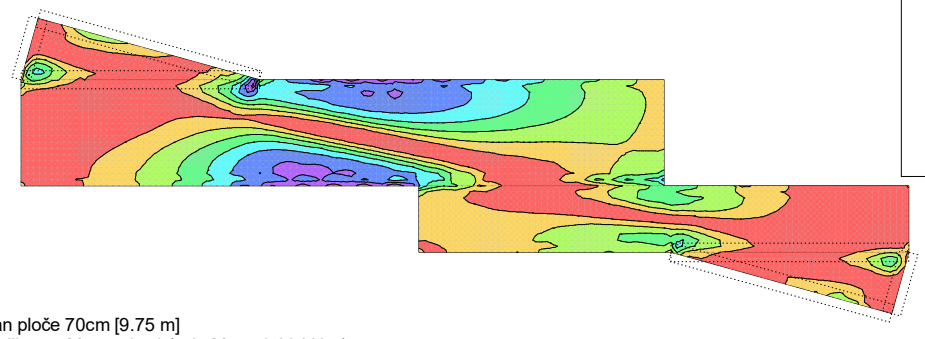
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 8.57 / min Mxy= -62.87 kNm/m

Opt. 4: skupljanje



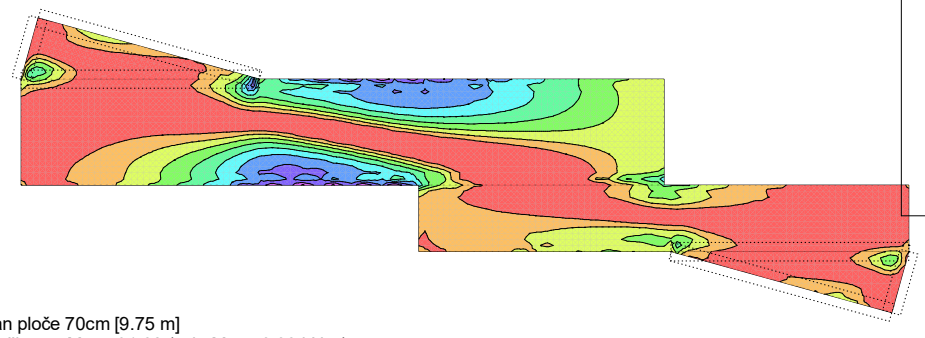
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 84.26 / min Mxy= -13.22 kNm/m

Opt. 5: LM71



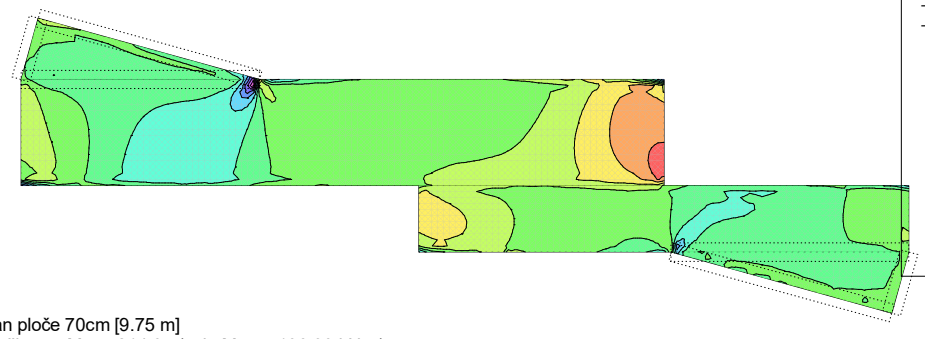
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 79.54 / min Mxy= 0.03 kNm/m

Opt. 6: SW/2



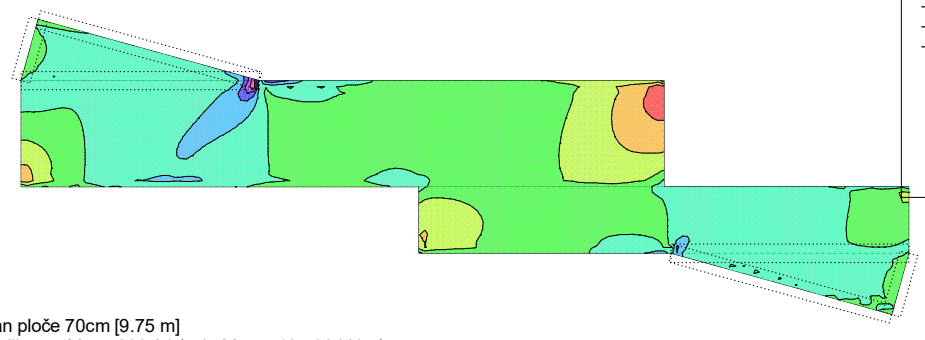
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 91.68 / min Mxy= 0.00 kNm/m

Opt. 11: komb temp 1



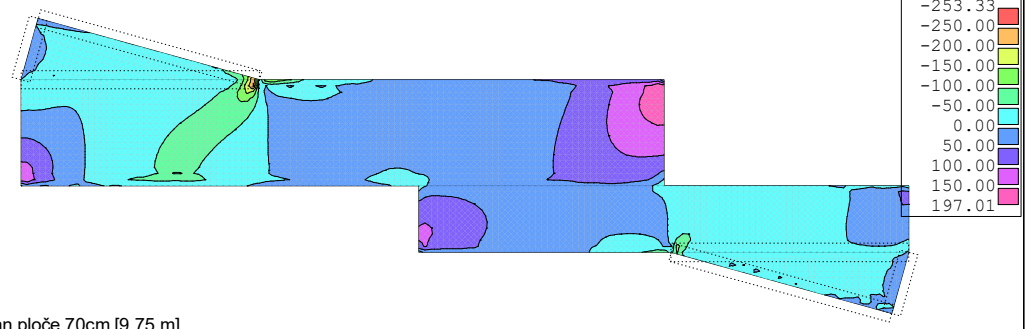
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 214.05 / min Mxy= -136.33 kNm/m

Opt. 12: komb temp 2



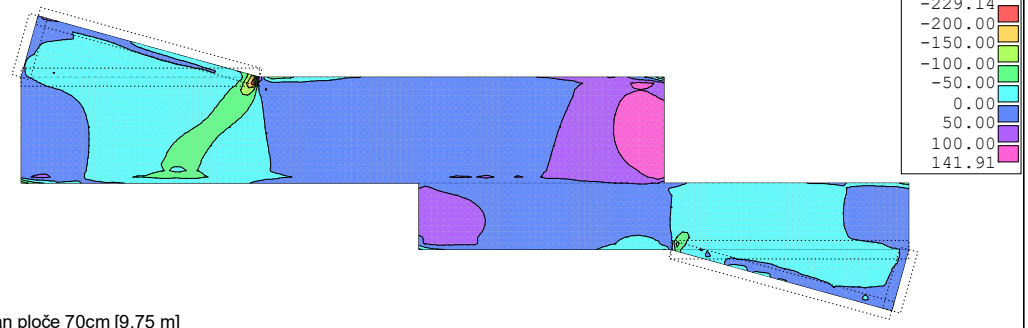
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 238.24 / min Mxy= -187.98 kNm/m

Opt. 13: komb temp 3



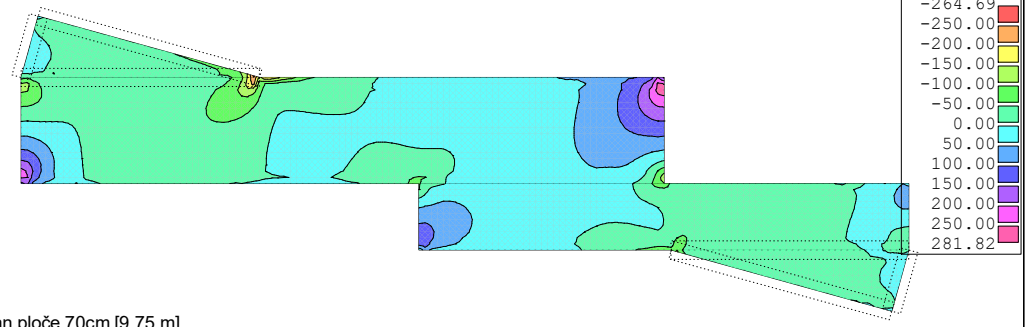
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 197.00 / min Mxy= -253.32 kNm/m

Opt. 14: komb temp 4



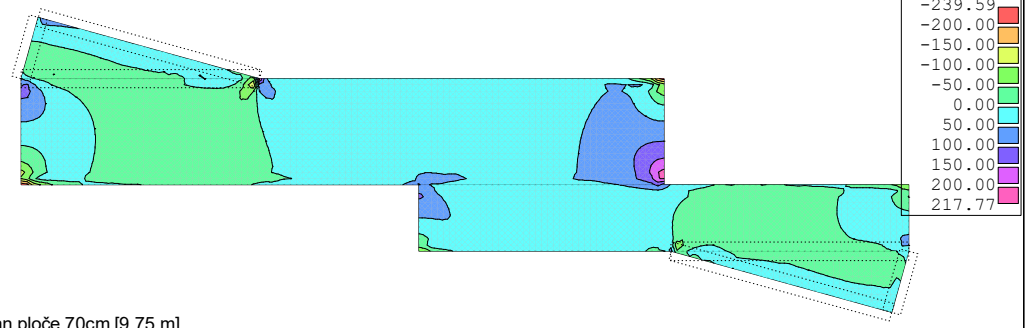
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 141.90 / min Mxy= -229.13 kNm/m

Opt. 15: komb temp 5



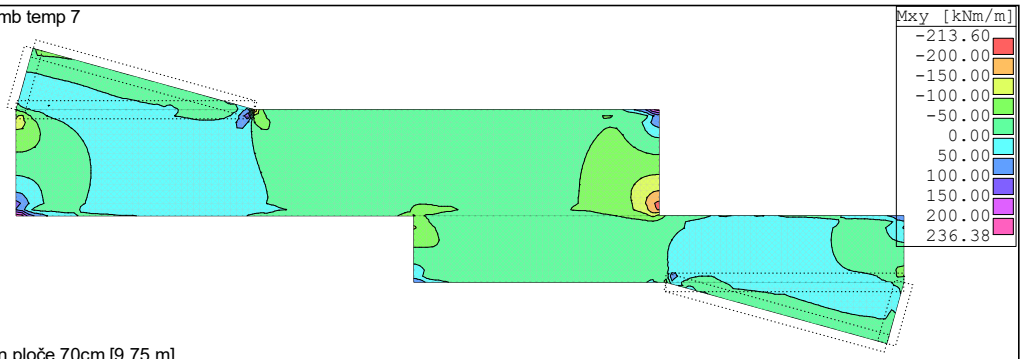
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 281.81 / min Mxy= -264.68 kNm/m

Opt. 16: komb temp 6



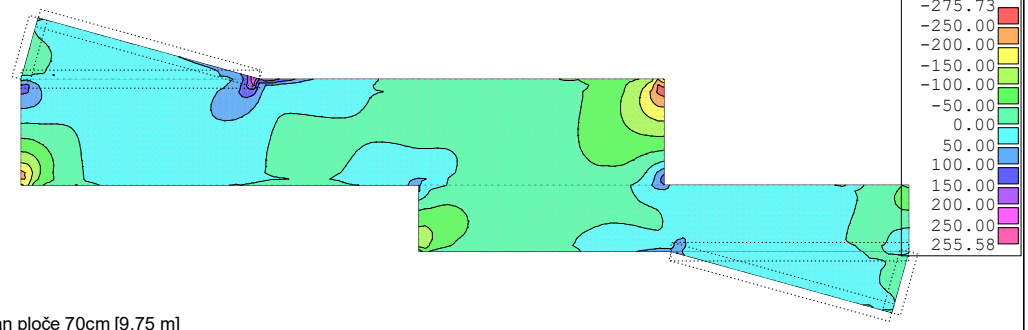
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 217.76 / min Mxy= -239.58 kNm/m

Opt. 17: komb temp 7



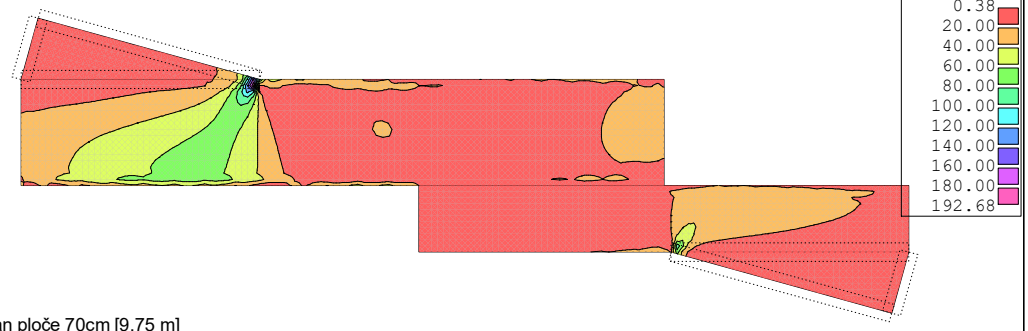
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 236.37 / min Mxy= -213.59 kNm/m

Opt. 18: komb temp 8



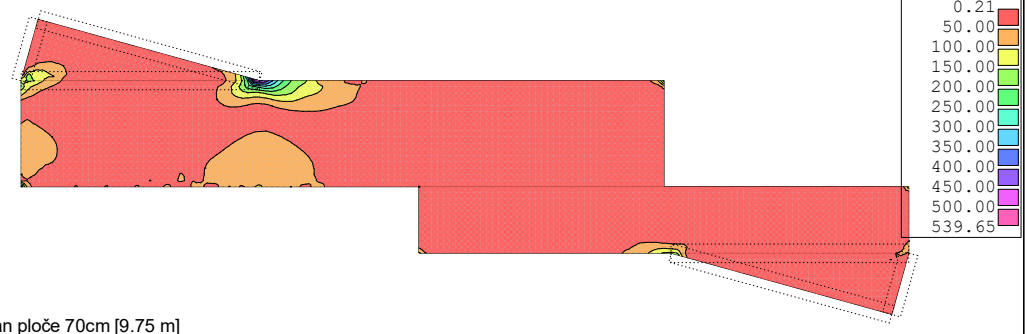
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 255.57 / min Mxy= -275.72 kNm/m

Opt. 20: Sx



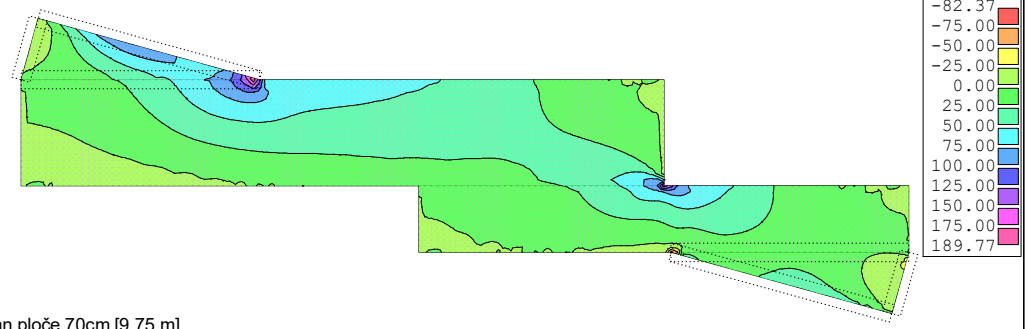
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 192.67 / min Mxy= 0.39 kNm/m

Opt. 21: Sy



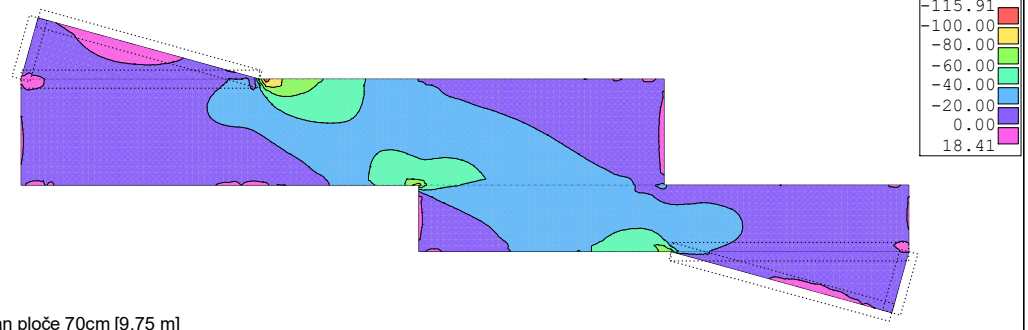
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Mxy= 539.64 / min Mxy= 0.22 kNm/m

Opt. 1: sopstvena tezina (g)



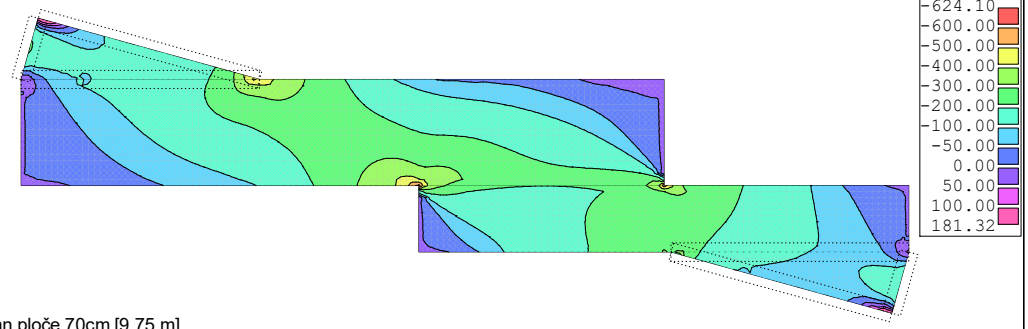
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 189.76 / min Nx= -82.36 kN/m

Opt. 2: mrtav teret (Δg)



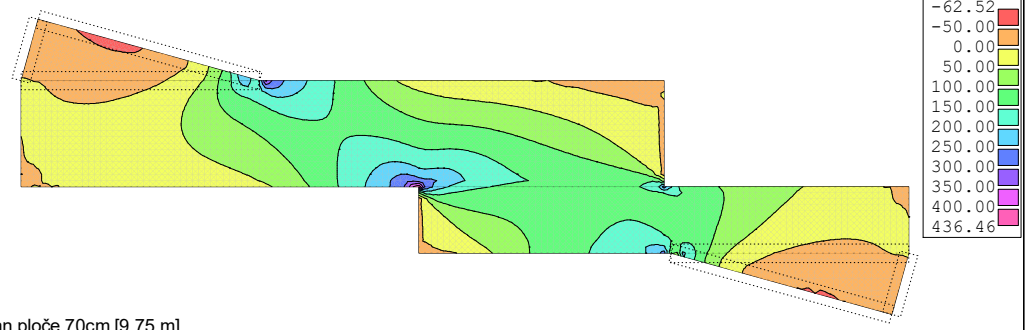
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 18.40 / min Nx= -115.90 kN/m

Opt. 3: horizontalan pritisak tla



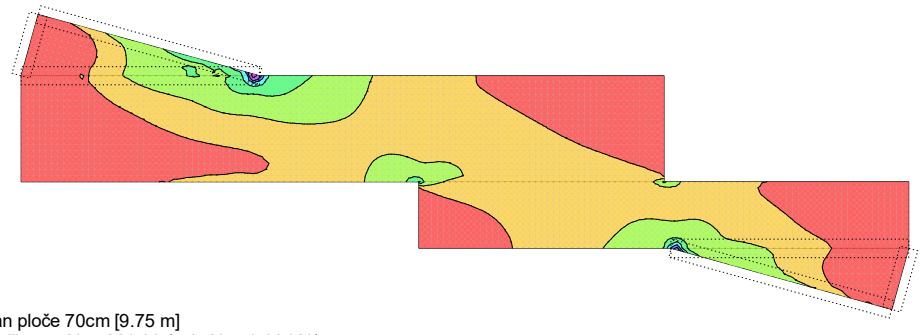
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 181.31 / min Nx= -624.09 kN/m

Opt. 4: skupljanje



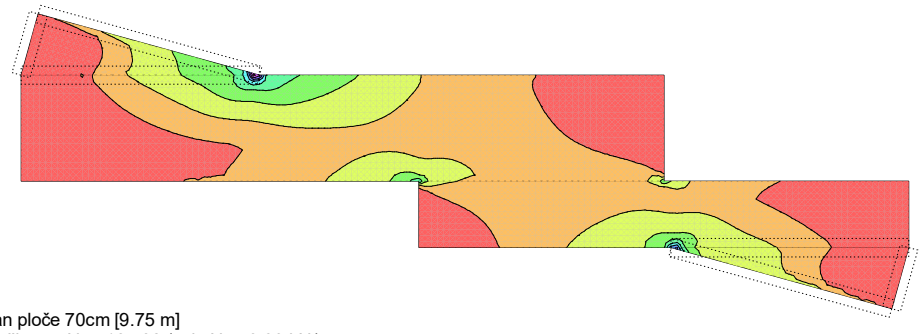
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 436.45 / min Nx= -62.51 kN/m

Opt. 5: LM71



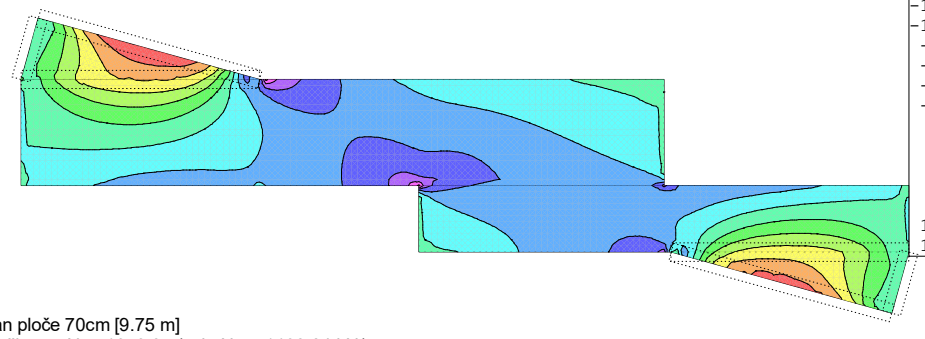
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 228.33 / min Nx= 0.00 kN/m

Opt. 6: SW/2



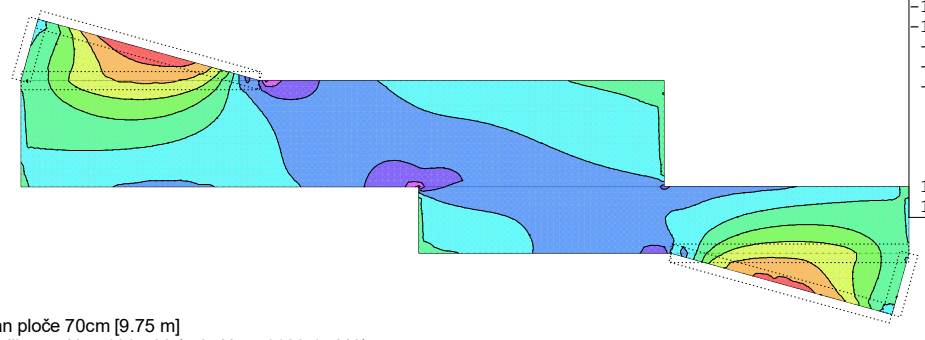
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 187.82 / min Nx= 0.00 kN/m

Opt. 11: komb temp 1



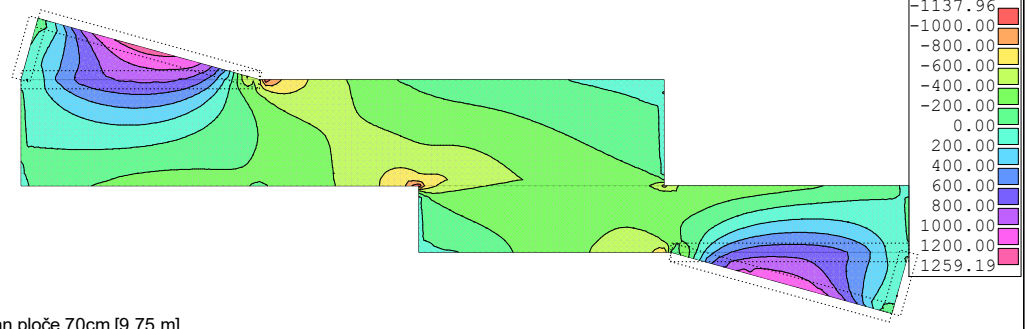
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 1053.37 / min Nx= -1190.84 kN/m

Opt. 12: komb temp 2



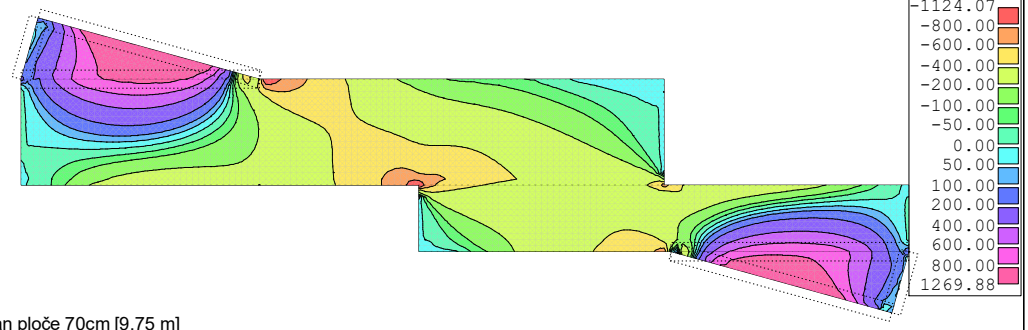
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 1067.26 / min Nx= -1180.15 kN/m

Opt. 13: komb temp 3



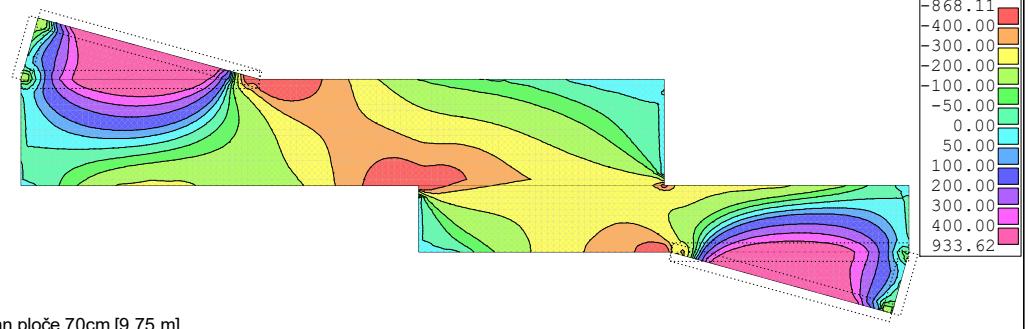
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 1259.18 / min Nx= -1137.95 kN/m

Opt. 14: komb temp 4



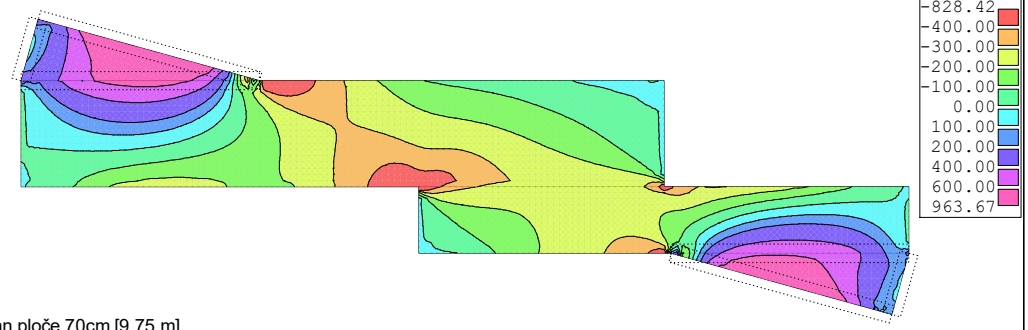
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 1269.87 / min Nx= -1124.06 kN/m

Opt. 15: komb temp 5



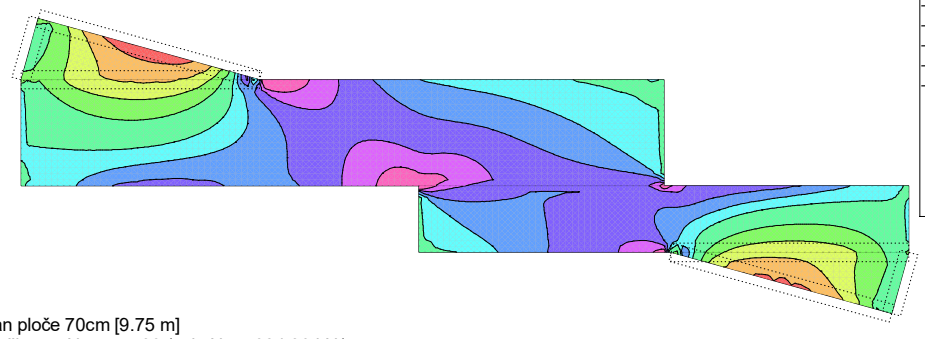
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 933.61 / min Nx= -868.10 kN/m

Opt. 16: komb temp 6



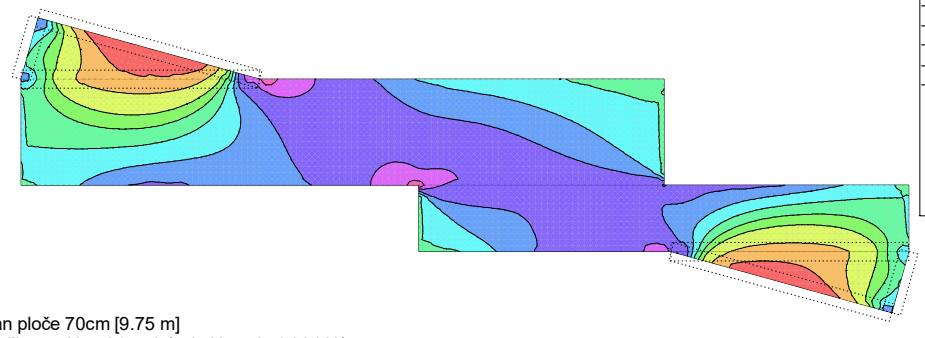
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 963.66 / min Nx= -828.41 kN/m

Opt. 17: komb temp 7



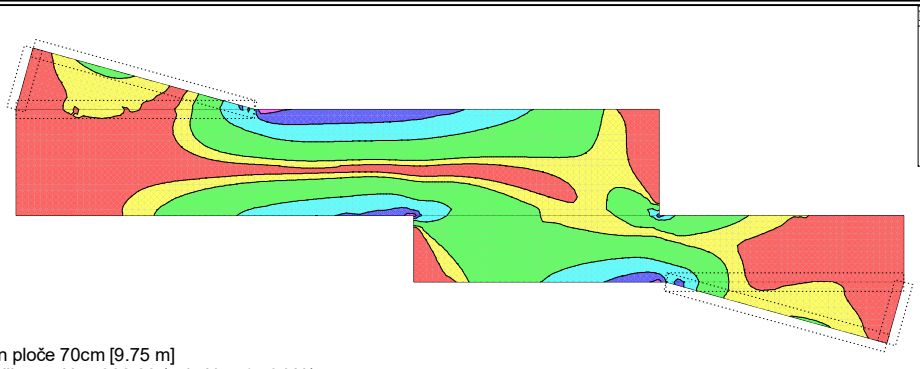
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 775.39 / min Nx= -904.39 kN/m

Opt. 18: komb temp 8



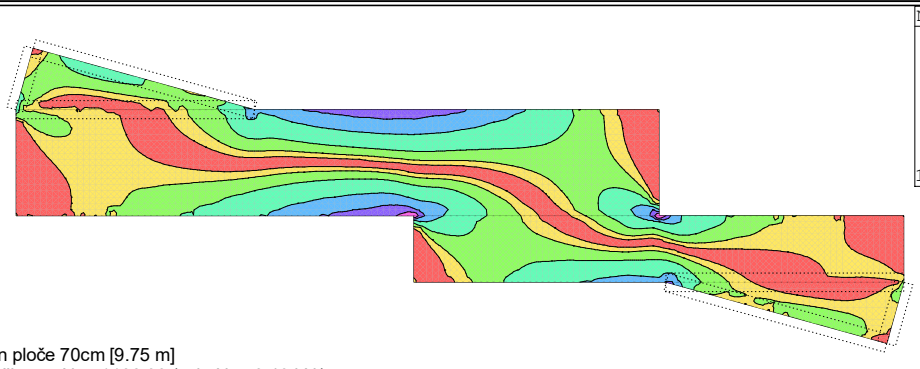
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 815.59 / min Nx= -874.39 kN/m

Opt. 20: Sx



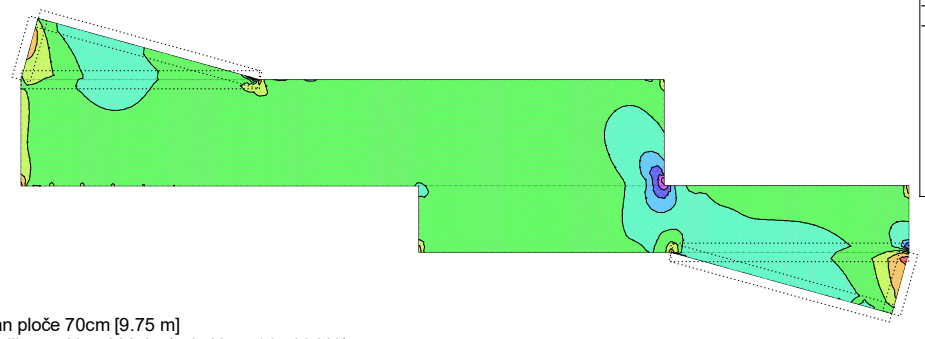
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 882.20 / min Nx= 1.79 kN/m

Opt. 21: Sy



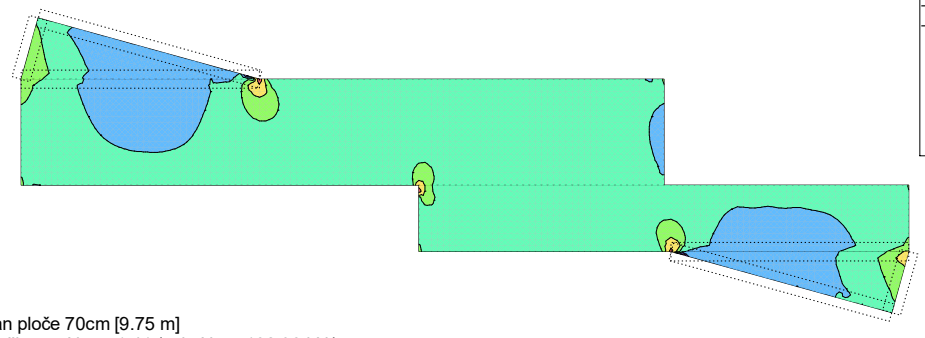
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Nx= 1106.90 / min Nx= 0.49 kN/m

Opt. 1: sopstvena tezina (g)



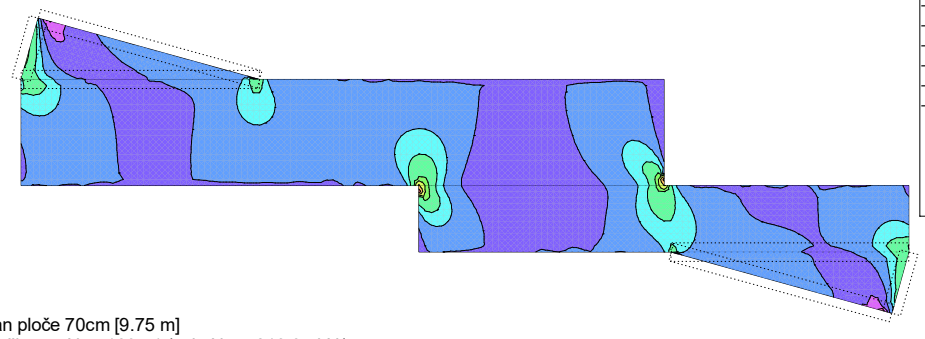
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 282.65 / min Ny= -147.89 kN/m

Opt. 2: mrtav teret (Δg)



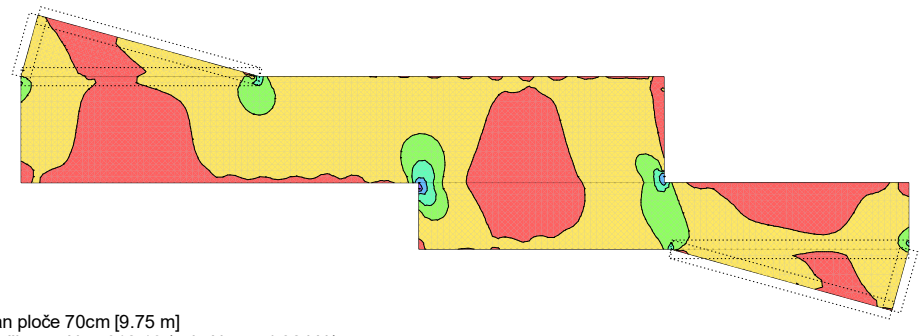
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 71.41 / min Ny= -132.90 kN/m

Opt. 3: horizontalan pritisak tla



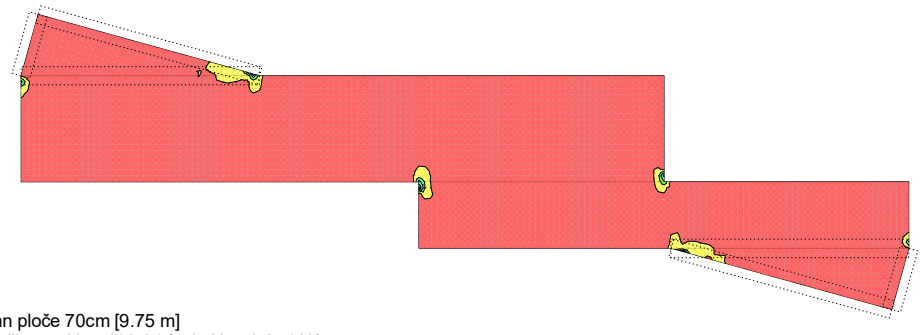
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 169.51 / min Ny= -813.97 kN/m

Opt. 4: skupljanje



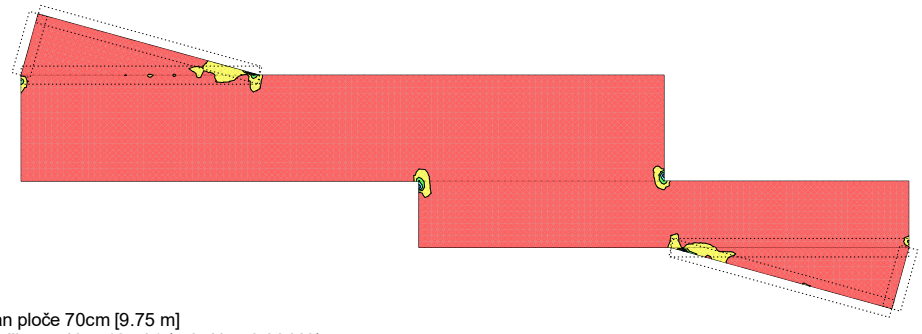
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 612.10 / min Ny= -54.82 kN/m

Opt. 5: LM71



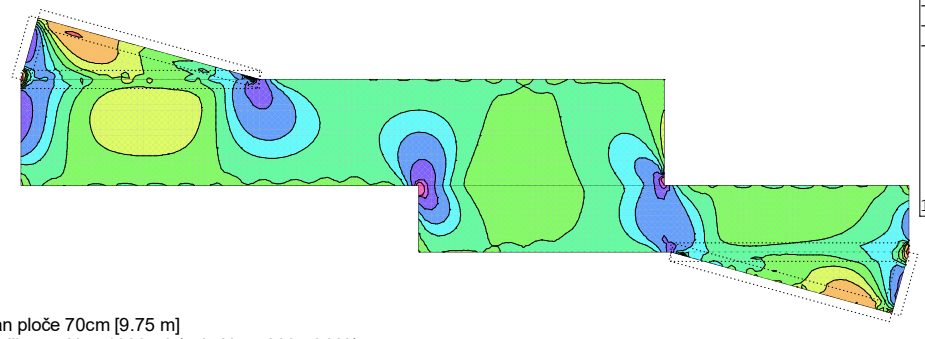
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 129.04 / min Ny= 0.07 kN/m

Opt. 6: SW/2



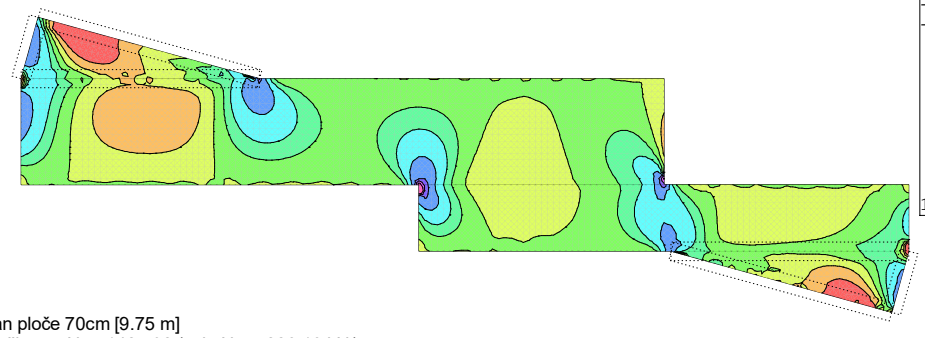
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 137.01 / min Ny= 0.00 kN/m

Opt. 11: komb temp 1



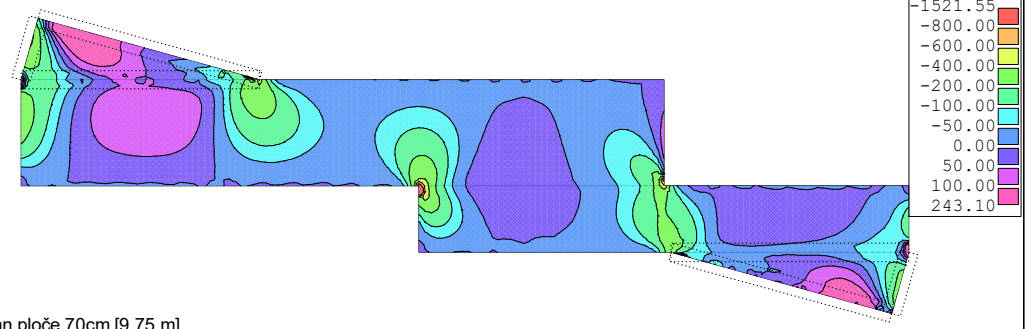
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 1380.76 / min Ny= -283.72 kN/m

Opt. 12: komb temp 2



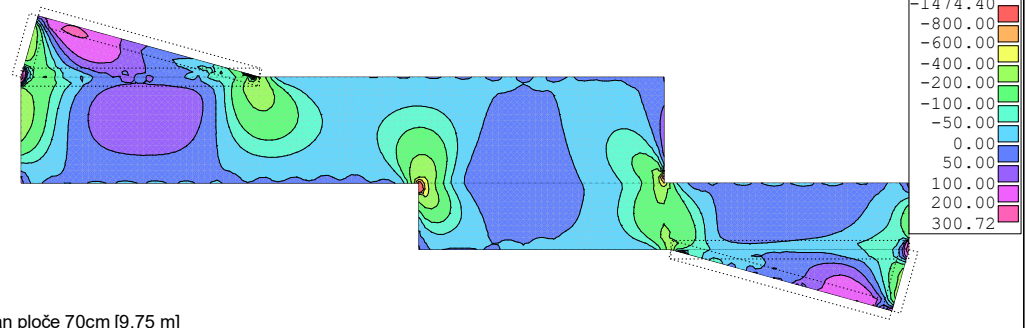
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 1427.92 / min Ny= -226.10 kN/m

Opt. 13: komb temp 3



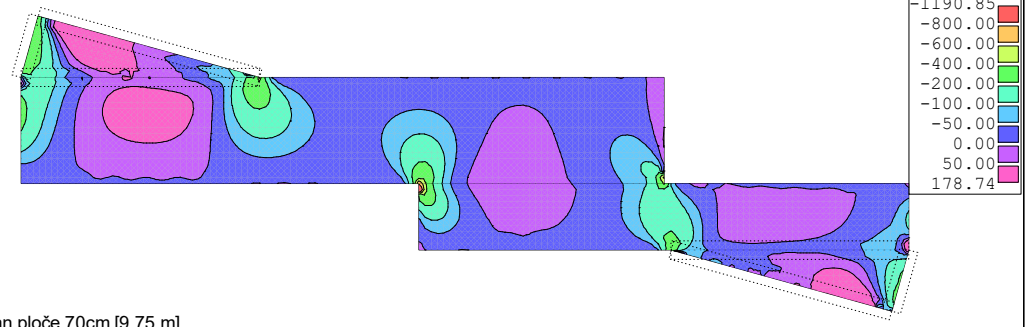
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 243.09 / min Ny= -1521.54 kN/m

Opt. 14: komb temp 4



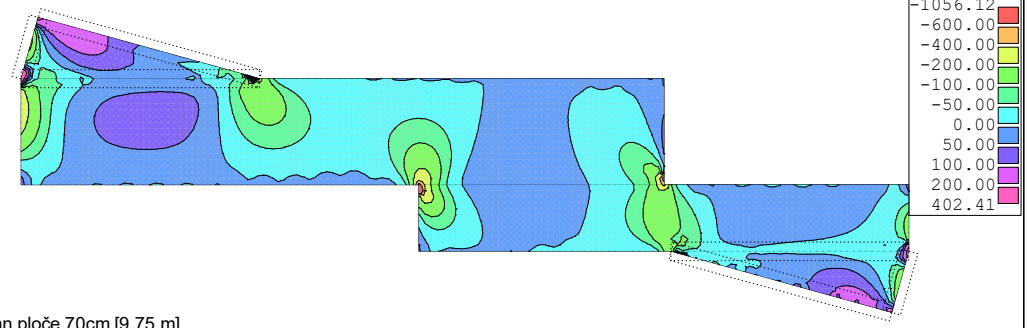
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 300.71 / min Ny= -1474.39 kN/m

Opt. 15: komb temp 5



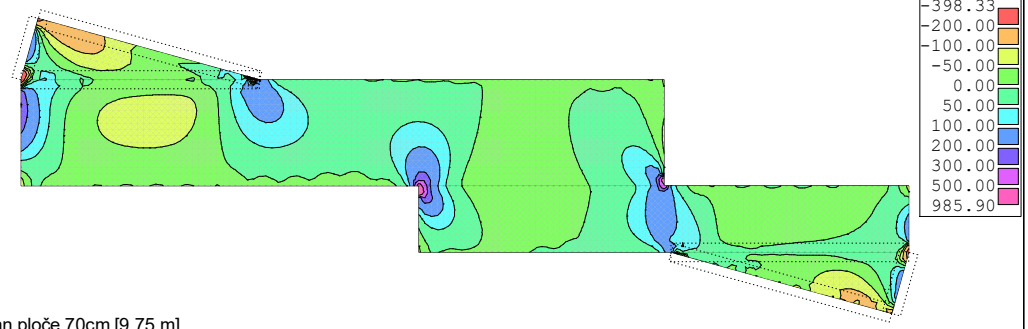
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 178.73 / min Ny= -1190.84 kN/m

Opt. 16: komb temp 6



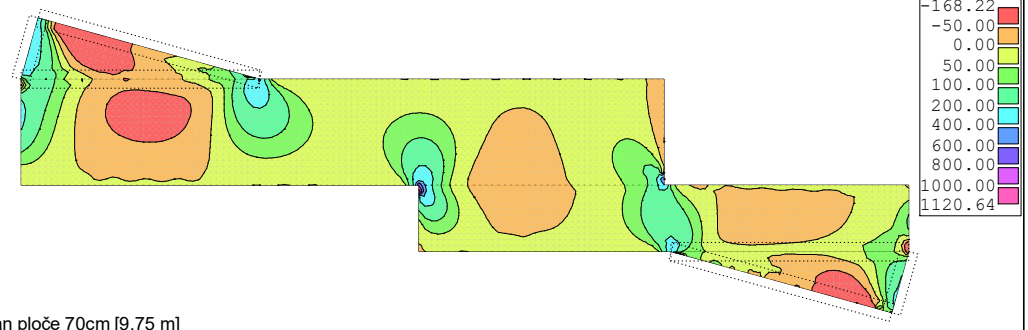
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 402.40 / min Ny= -1056.11 kN/m

Opt. 17: komb temp 7



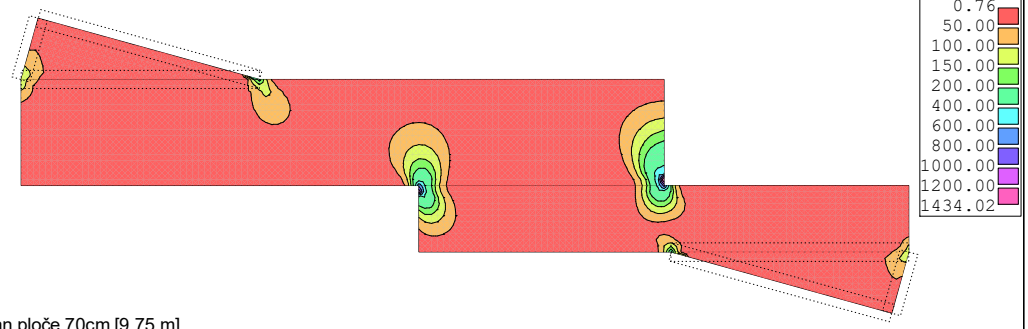
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 985.89 / min Ny= -398.32 kN/m

Opt. 18: komb temp 8



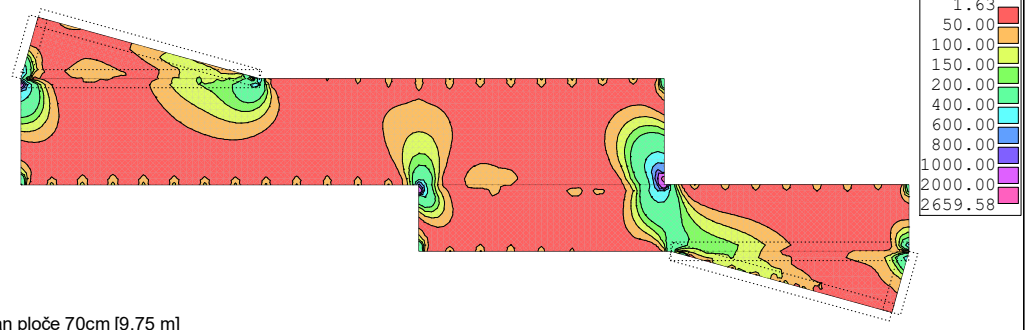
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 1120.63 / min Ny= -168.21 kN/m

Opt. 20: Sx



Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 1434.01 / min Ny= 0.77 kN/m

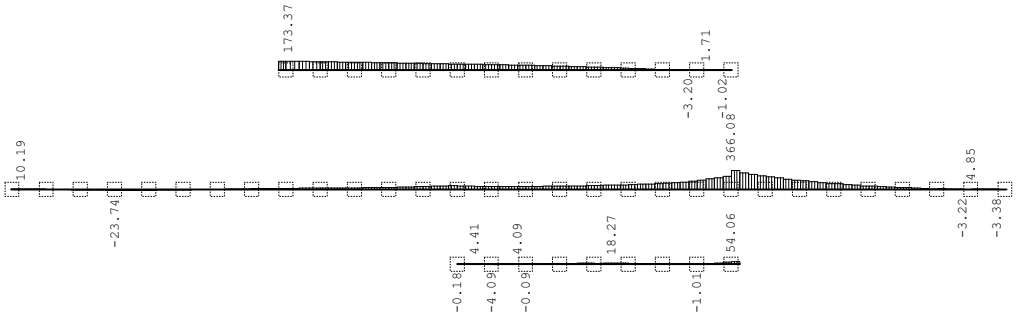
Opt. 21: Sy



Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u ploči: max Ny= 2659.57 / min Ny= 1.64 kN/m

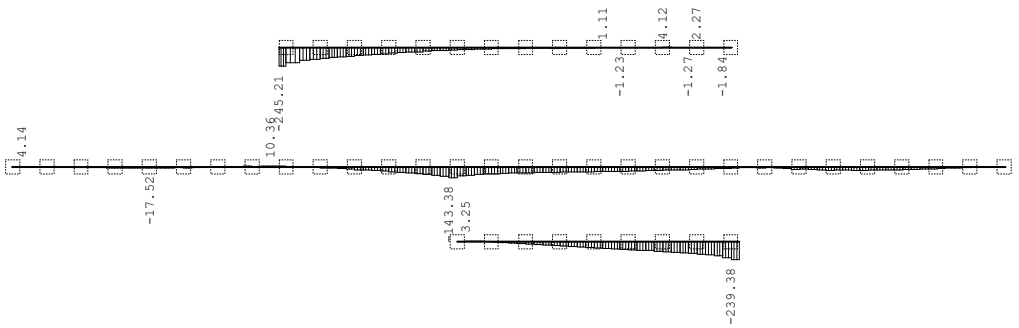
5.5.2 Греде

Opt. 1: sopstvena tezina (g)



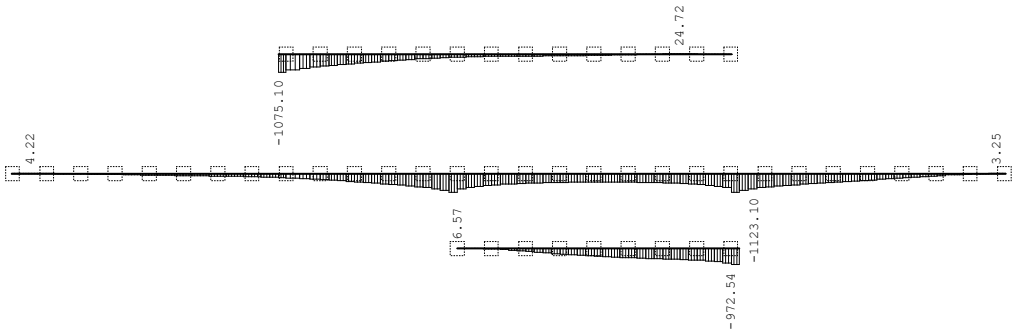
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 366.08 / min N1= -23.74 kN

Opt. 2: mrtav teret (Δg)



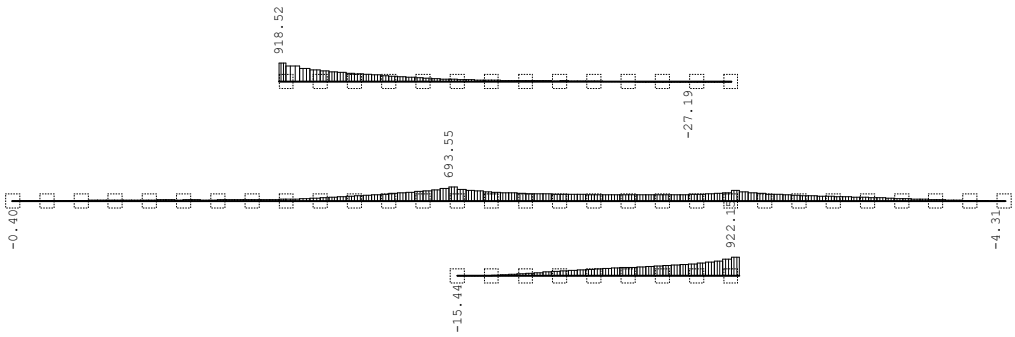
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 10.36 / min N1= -245.21 kN

Opt. 3: horizontalan pritisak tla



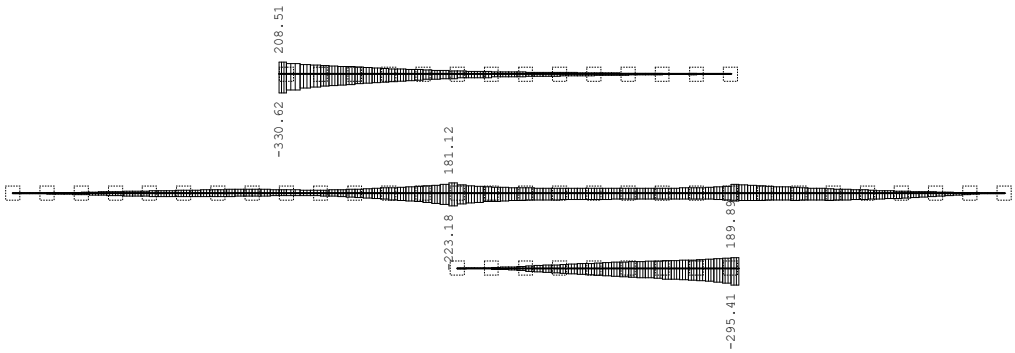
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 24.72 / min N1= -1123.10 kN

Opt. 4: skupljanje



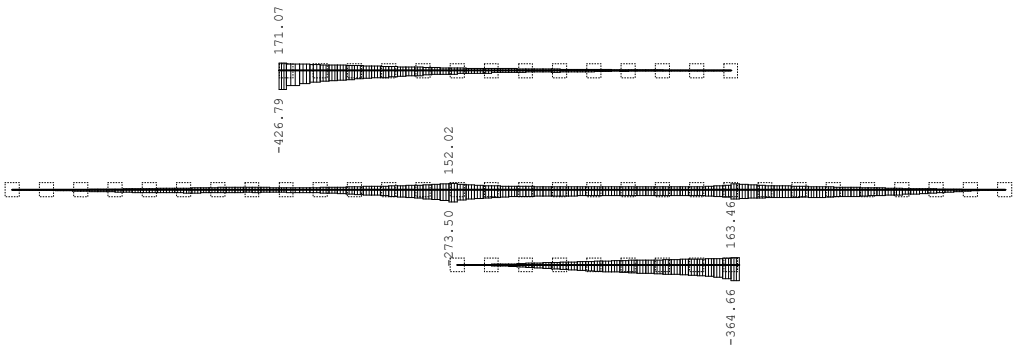
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 922.15 / min N1= -27.19 kN

Opt. 5: LM71



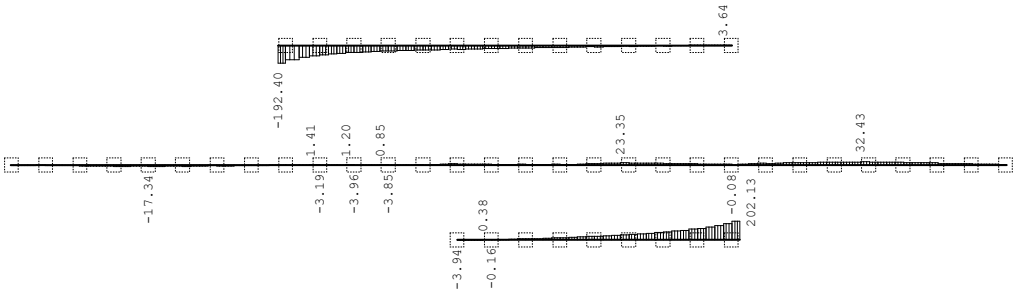
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 208.51 / min N1= -330.62 kN

Opt. 6: SW/2



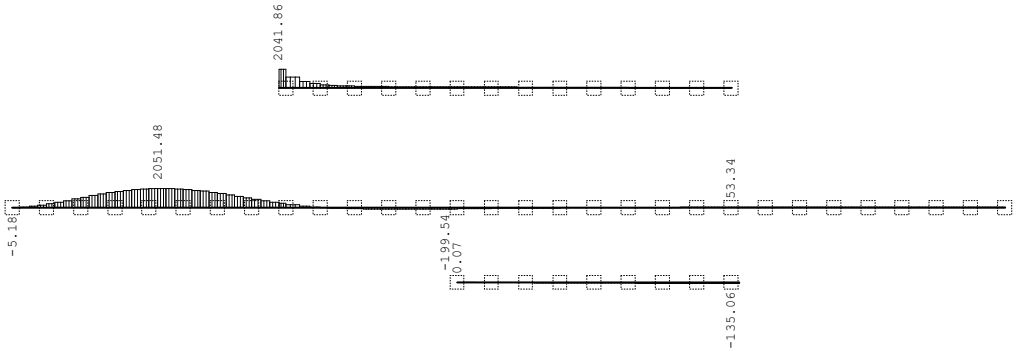
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 171.07 / min N1= -426.79 kN

Opt. 7: KP



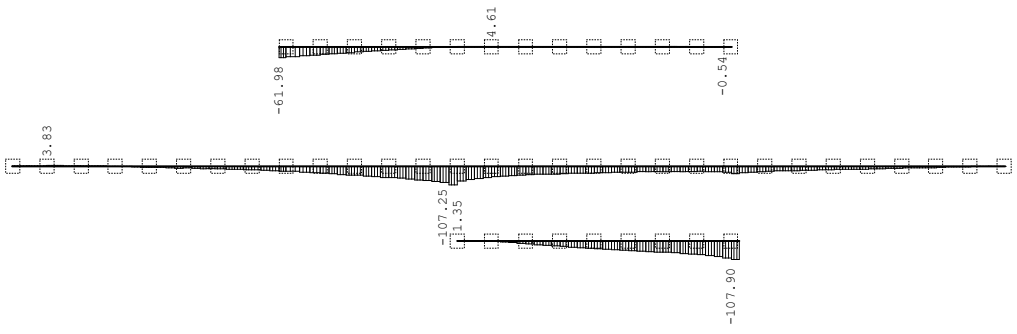
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 202.13 / min N1= -192.40 kN

Opt. 8: voz na nasipu ispred



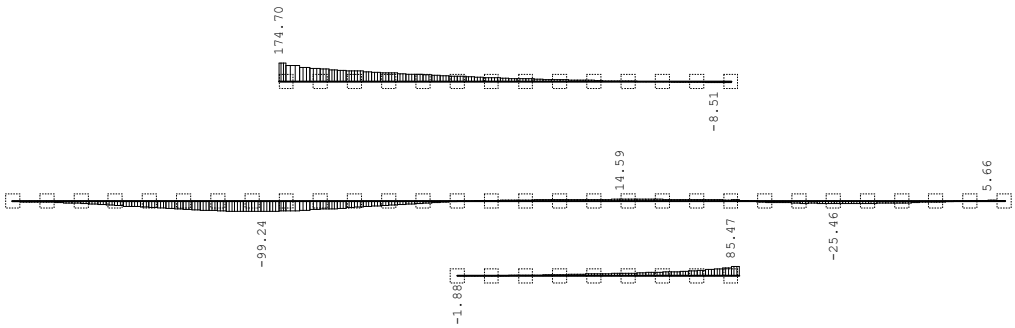
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 2051.48 / min N1= -199.54 kN

Opt. 9: voz na nasipu iza



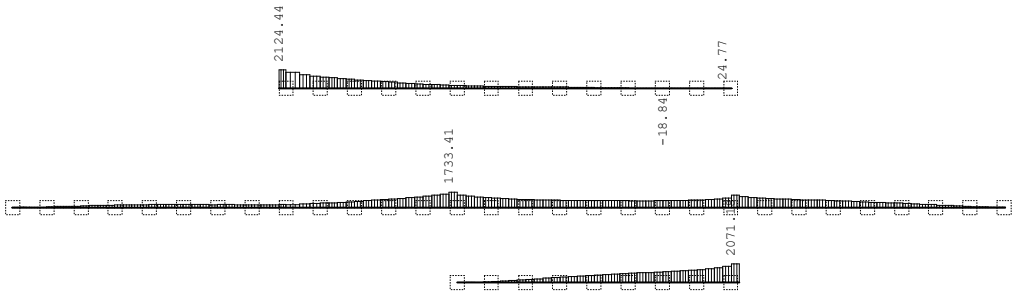
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 4.61 / min N1= -107.90 kN

Opt. 10: voz ispod



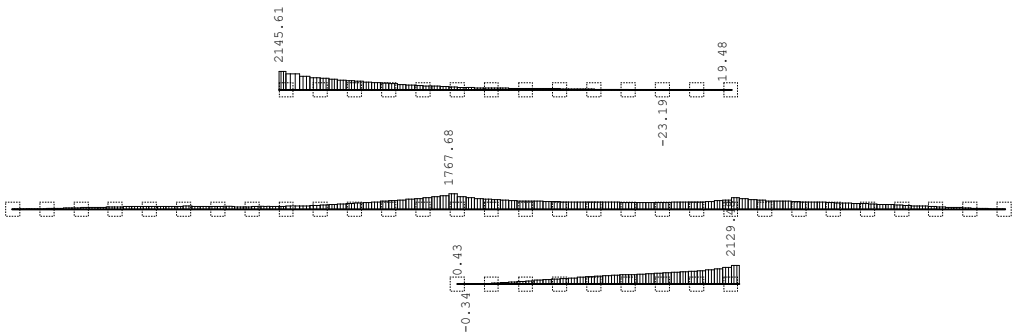
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 174.70 / min N1= -99.24 kN

Opt. 11: komb temp 1



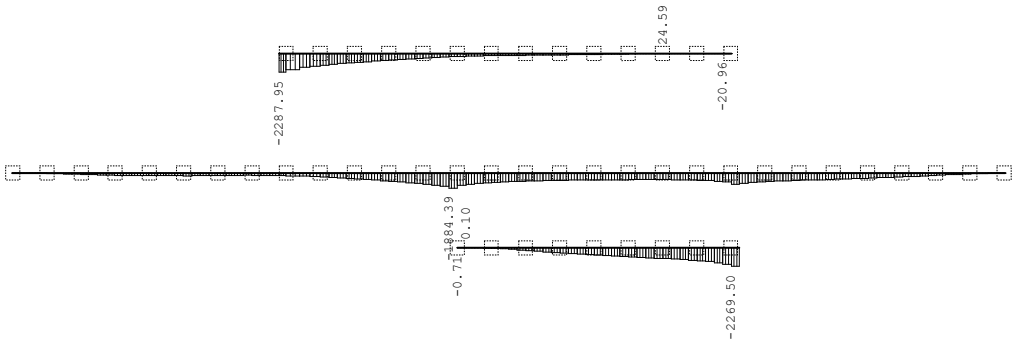
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 2124.44 / min N1= -18.84 kN

Opt. 12: komb temp 2



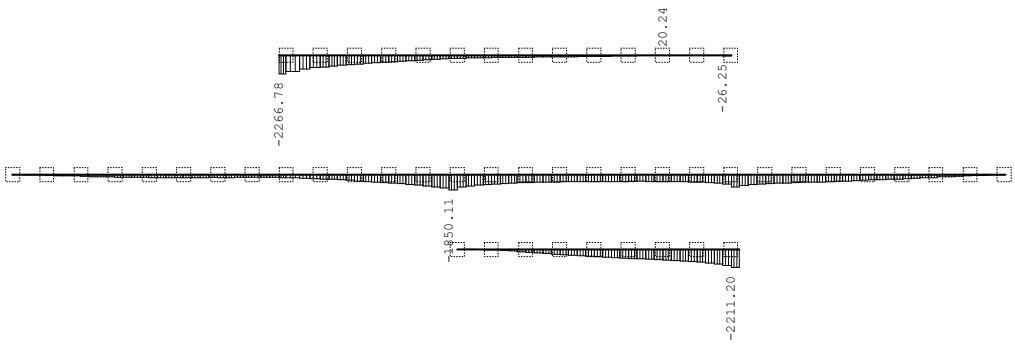
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 2145.61 / min N1= -23.19 kN

Opt. 13: komb temp 3



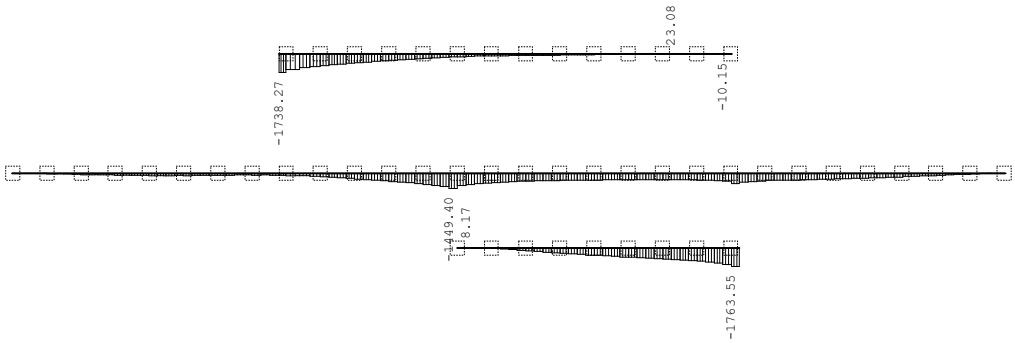
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 24.59 / min N1= -2287.95 kN

Opt. 14: komb temp 4



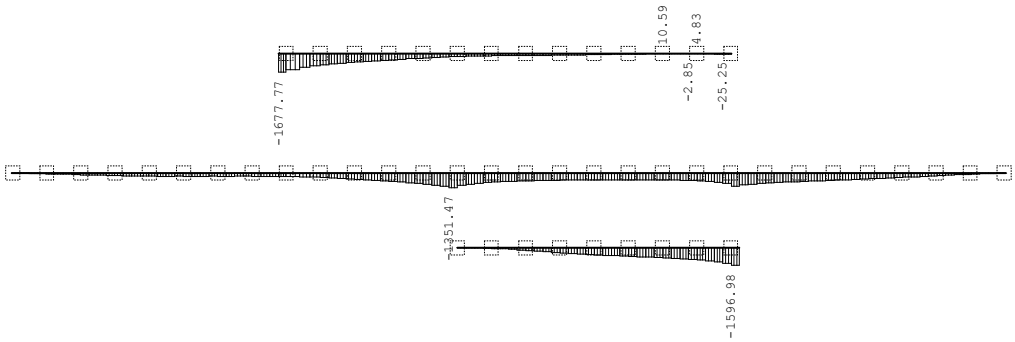
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 20.24 / min N1= -2266.78 kN

Opt. 15: komb temp 5



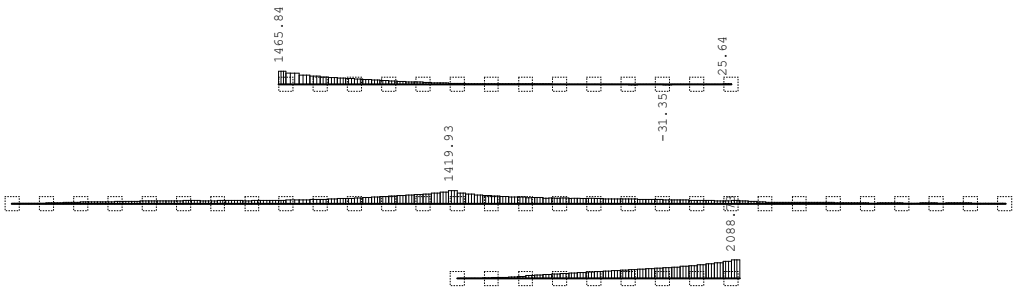
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 23.08 / min N1= -1763.55 kN

Opt. 16: komb temp 6



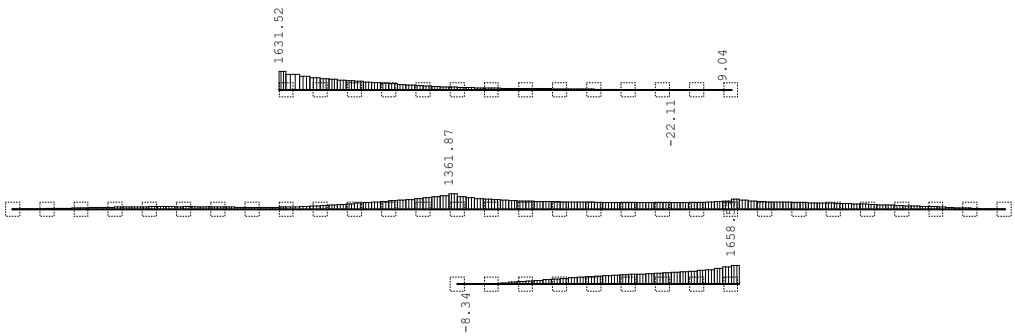
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 10.59 / min N1= -1677.77 kN

Opt. 17: komb temp 7



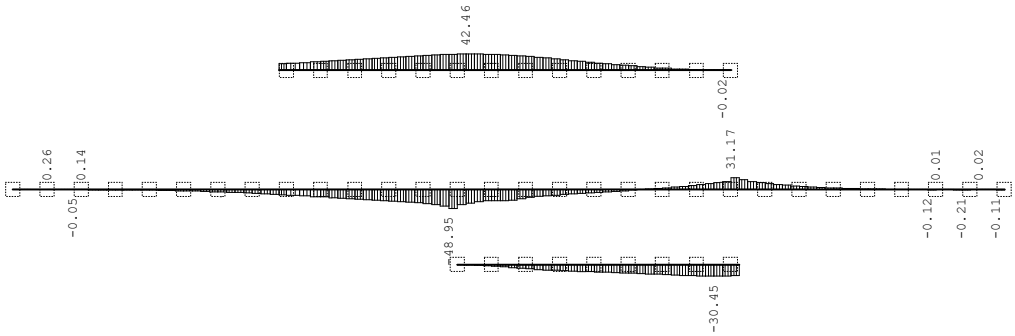
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 2088.73 / min N1= -31.35 kN

Opt. 18: komb temp 8



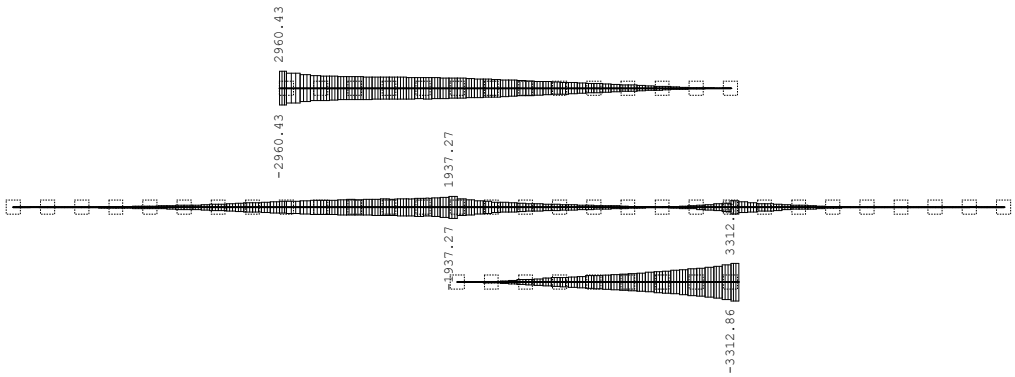
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 1658.53 / min N1= -22.11 kN

Opt. 19: BU



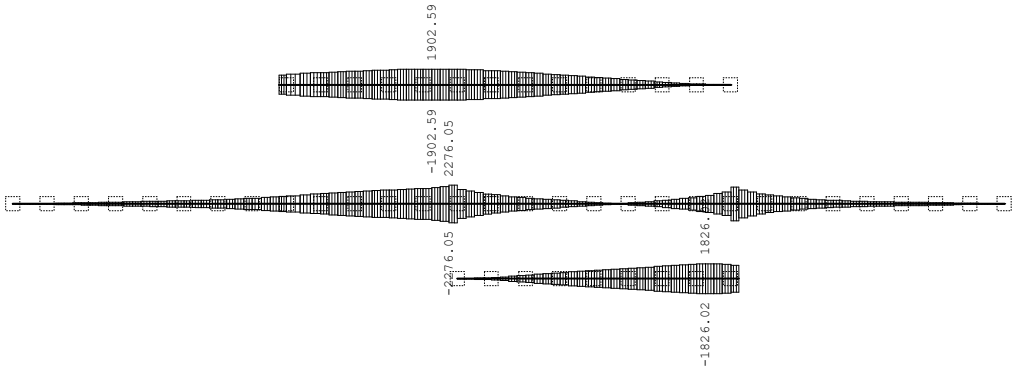
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 42.46 / min N1= -48.95 kN

Opt. 20: Sx



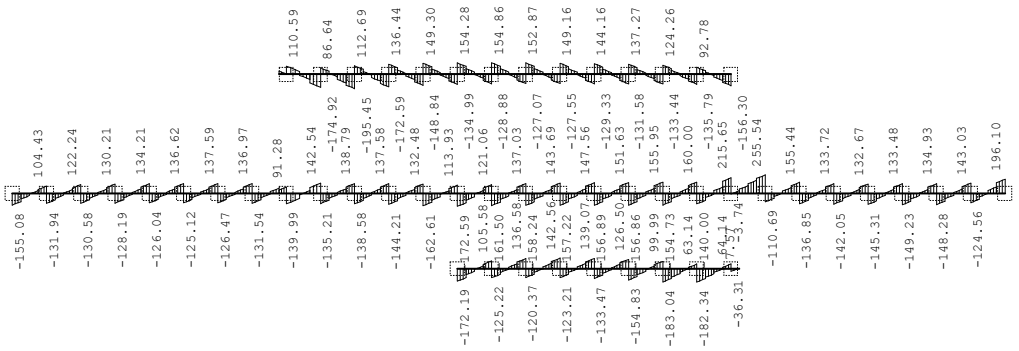
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 3312.86 / min N1= -3312.86 kN

Opt. 21: Sy



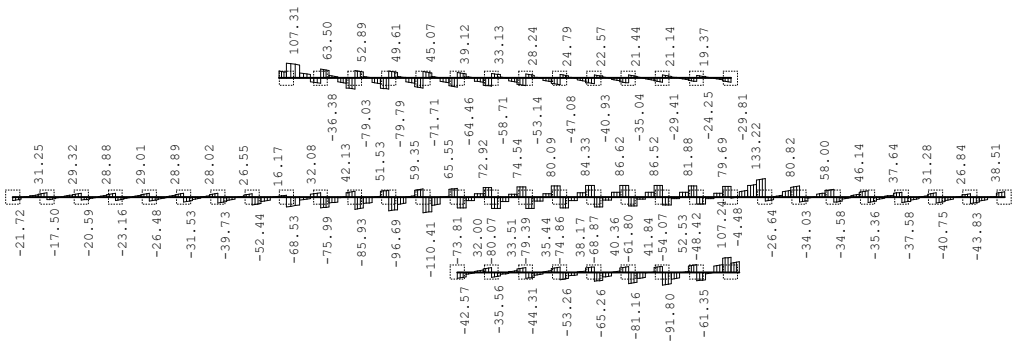
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max N1= 2276.05 / min N1= -2276.05 kN

Opt. 1: sopstvena tezina (g)



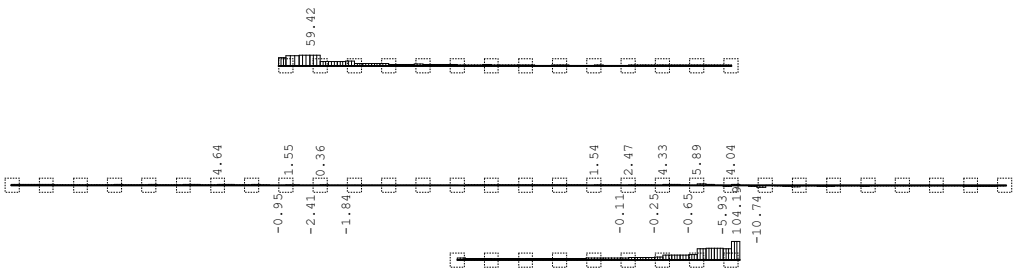
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 255.54 / min T2= -195.45 kN

Opt. 2: mrtav teret (Δg)



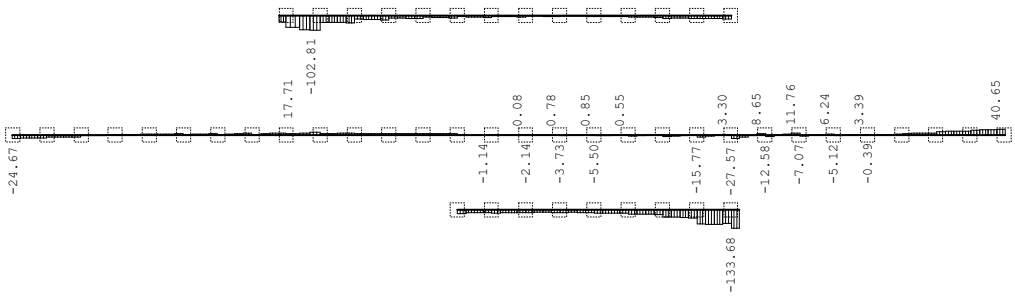
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 133.22 / min T2= -110.41 kN

Opt. 3: horizontalan pritisak tla



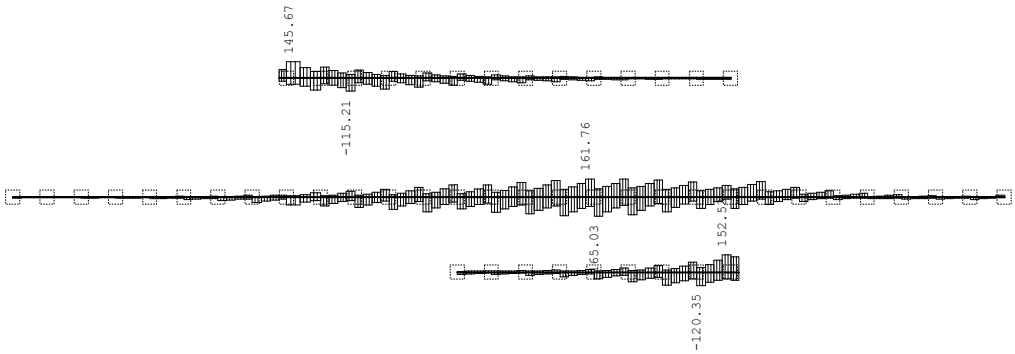
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 104.19 / min T2= -10.74 kN

Opt. 4: skupljanje



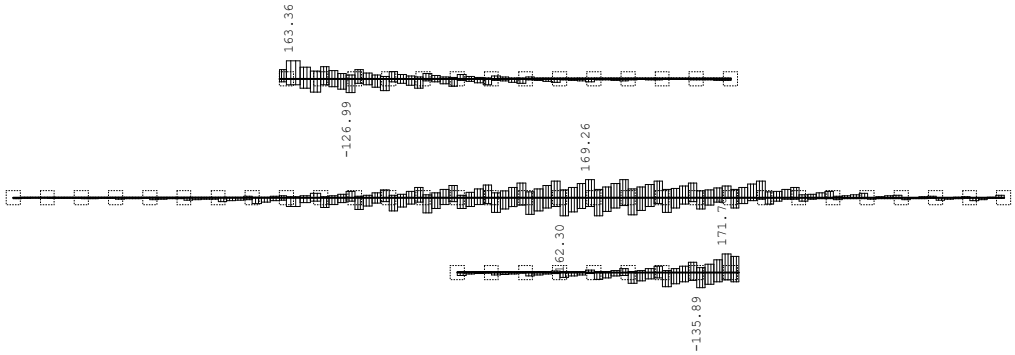
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 40.65 / min T2= -133.68 kN

Opt. 5: LM71



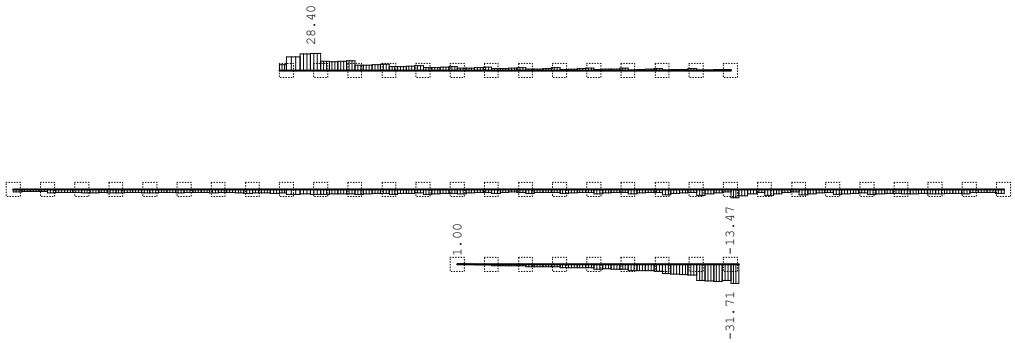
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 161.76 / min T2= -165.03 kN

Opt. 6: SW/2



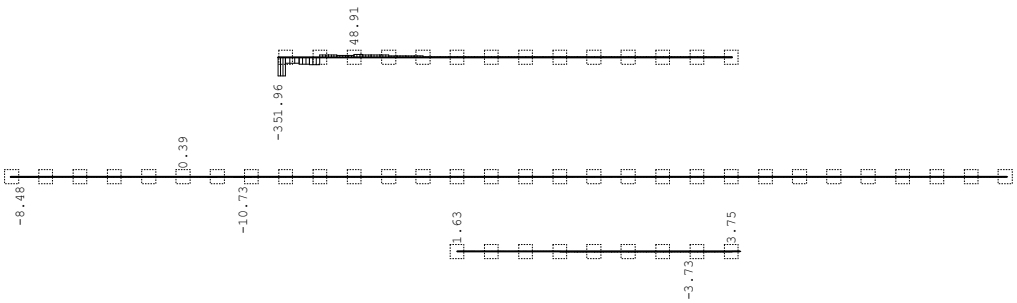
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 171.76 / min T2= -162.30 kN

Opt. 7: KP



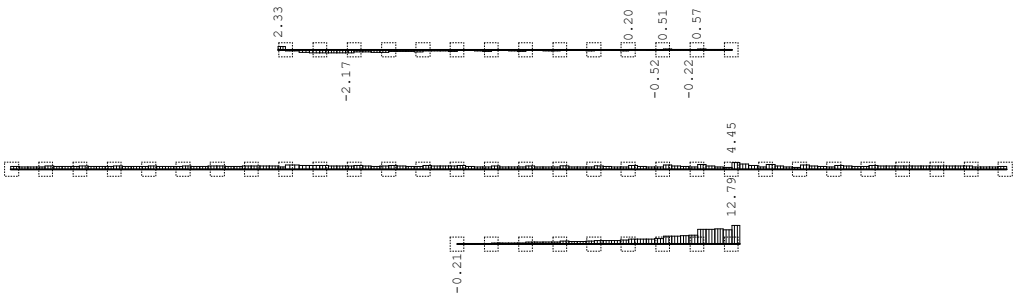
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 28.40 / min T2= -31.71 kN

Opt. 8: voz na nasipu ispred



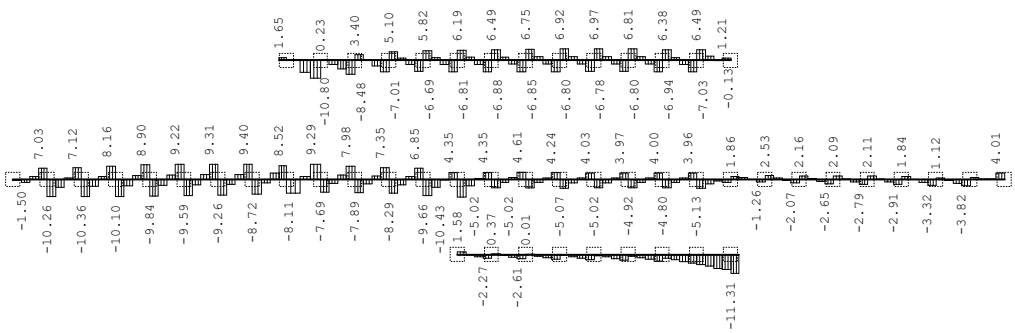
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 48.91 / min T2= -351.96 kN

Opt. 9: voz na nasipu iza



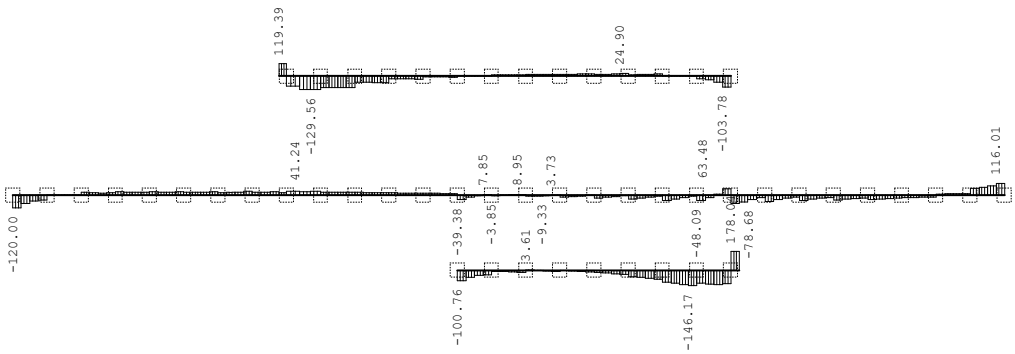
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 12.79 / min T2= -2.17 kN

Opt. 10: voz ispod



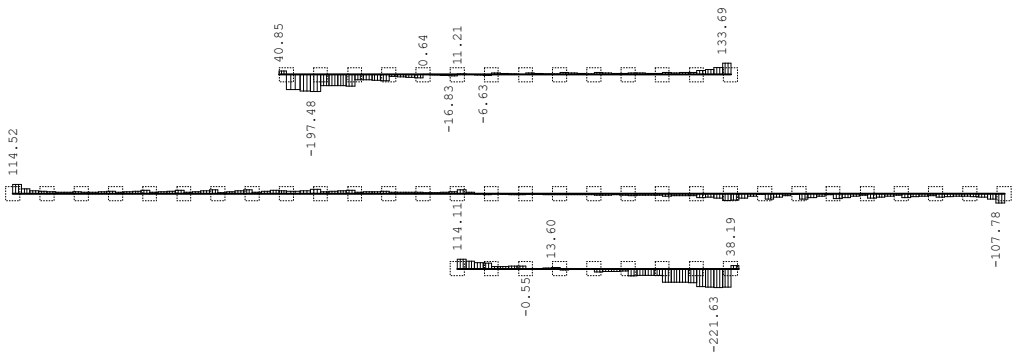
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 9.40 / min T2= -11.31 kN

Opt. 11: komb temp 1



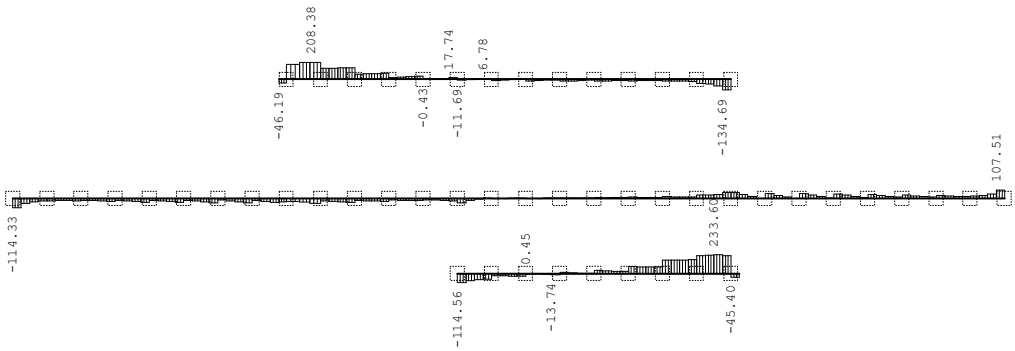
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 178.04 / min T2= -146.17 kN

Opt. 12: komb temp 2



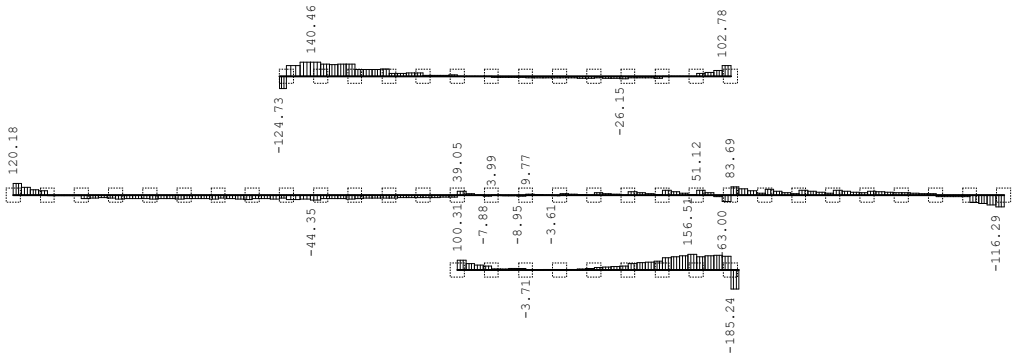
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 133.69 / min T2= -221.63 kN

Opt. 13: komb temp 3



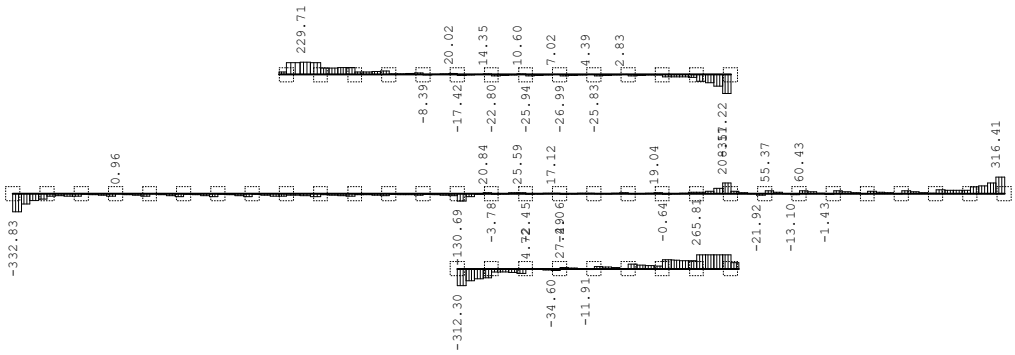
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 233.60 / min T2= -134.69 kN

Opt. 14: komb temp 4



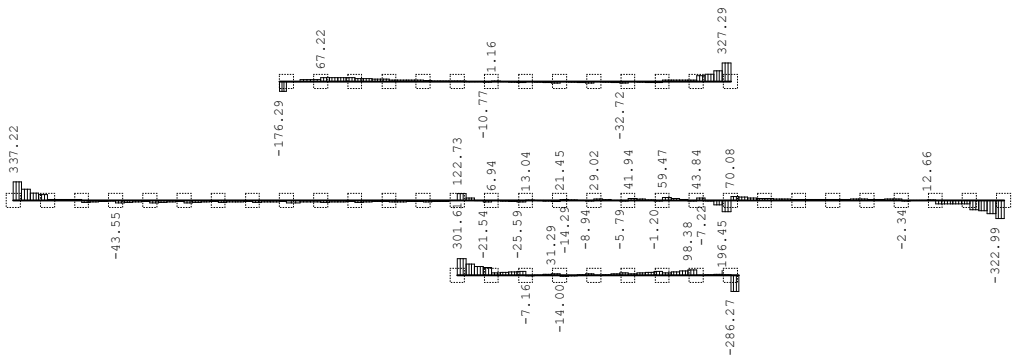
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 156.51 / min T2= -185.24 kN

Opt. 15: komb temp 5



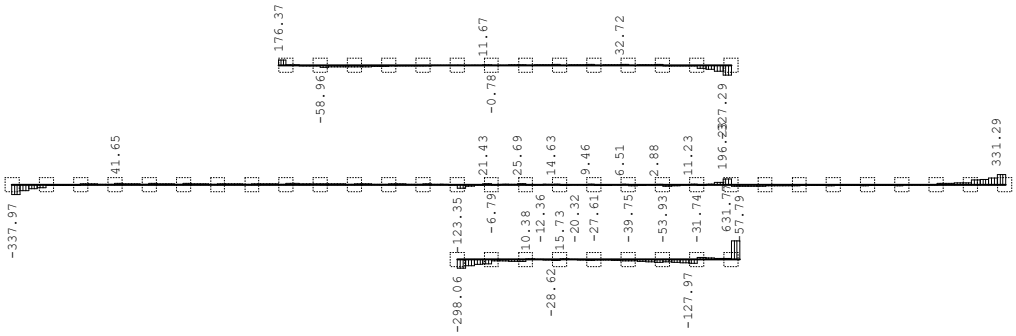
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 316.41 / min T2= -351.22 kN

Opt. 16: komb temp 6



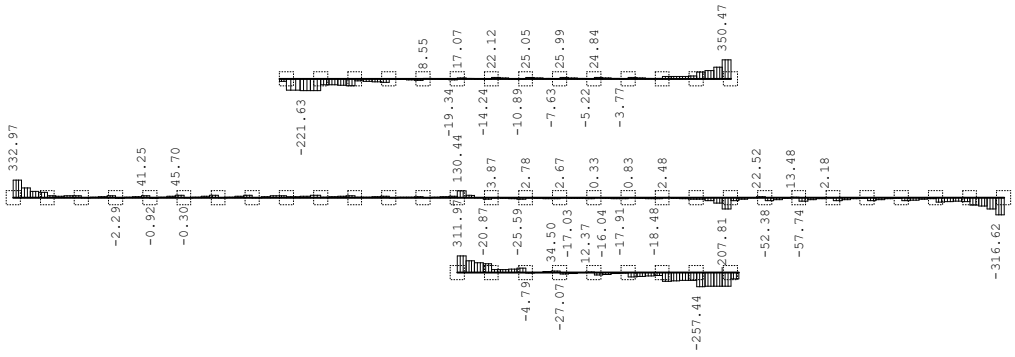
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 337.22 / min T2= -322.99 kN

Opt. 17: komb temp 7



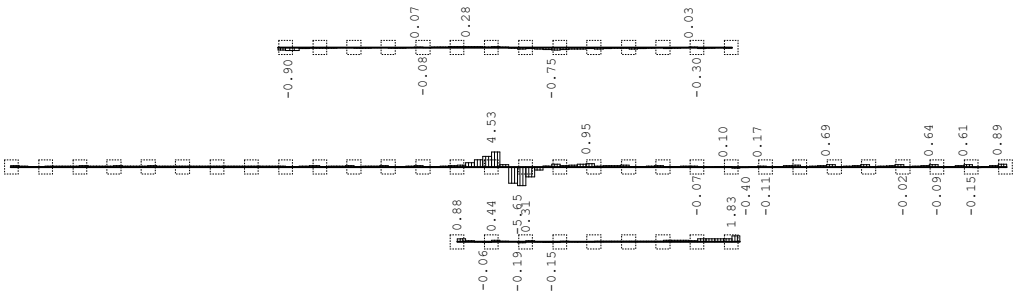
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 631.77 / min T2= -337.97 kN

Opt. 18: komb temp 8



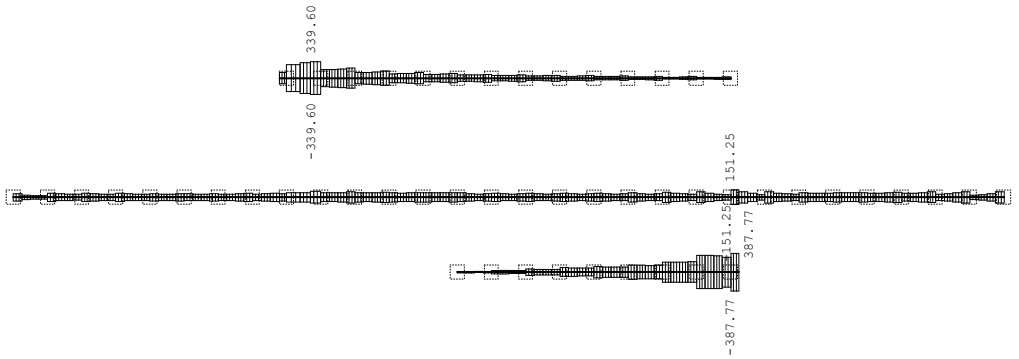
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 350.47 / min T2= -316.62 kN

Opt. 19: BU



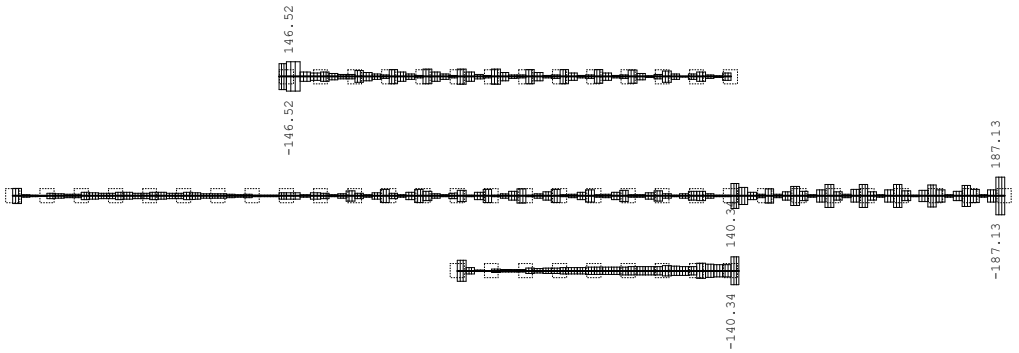
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 4.53 / min T2= -5.65 kN

Opt. 20: Sx



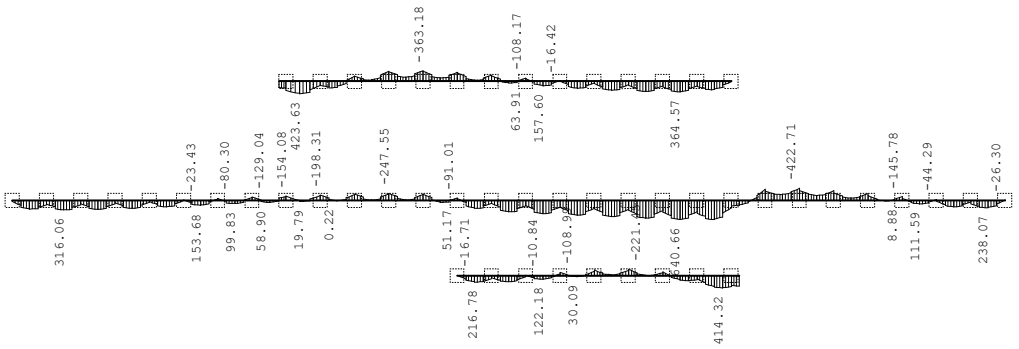
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 387.77 / min T2= -387.77 kN

Opt. 21: Sy



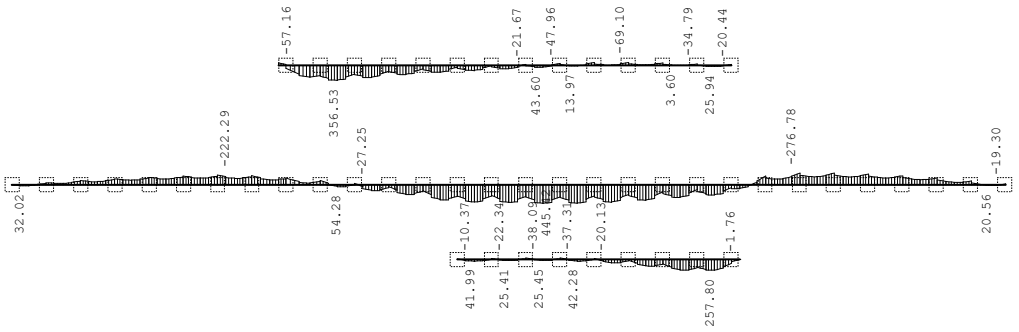
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max T2= 187.13 / min T2= -187.13 kN

Opt. 1: sopstvena tezina (g)



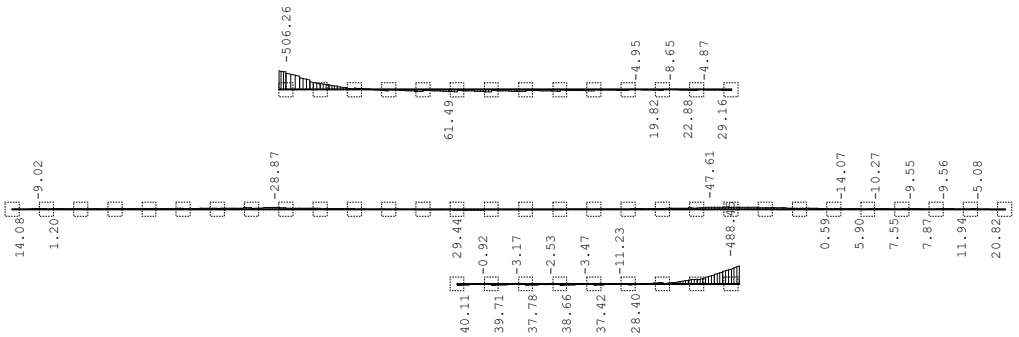
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 640.66 / min M3= -422.71 kNm

Opt. 2: mrtav teret (Δg)



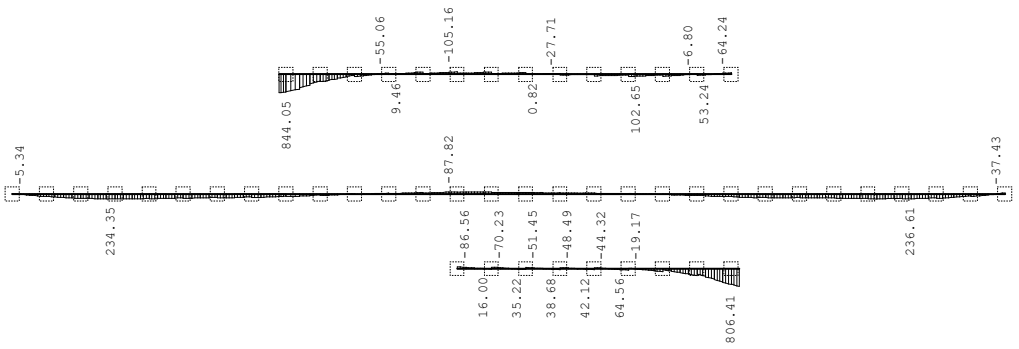
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 445.42 / min M3= -276.78 kNm

Opt. 3: horizontalan pritisak tla



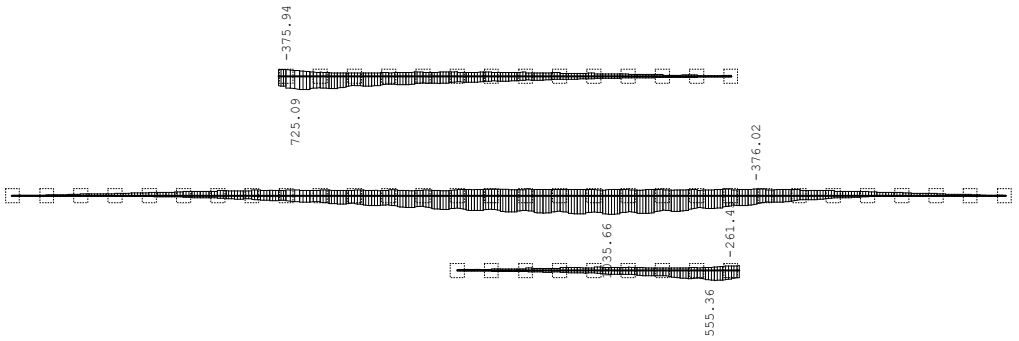
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 61.49 / min M3= -506.26 kNm

Opt. 4: skupljanje



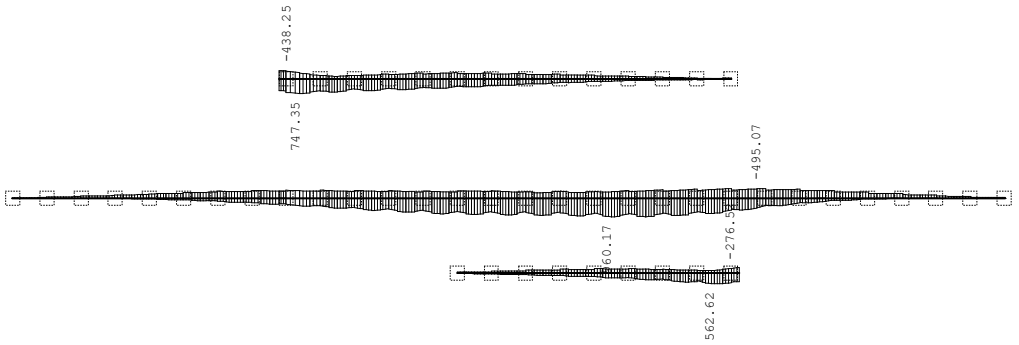
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 844.05 / min M3= -105.16 kNm

Opt. 5: LM71



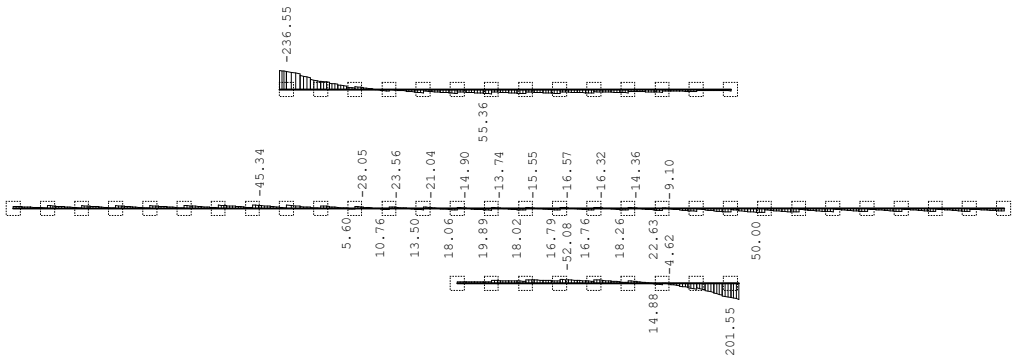
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 1035.66 / min M3= -376.02 kNm

Opt. 6: SW/2



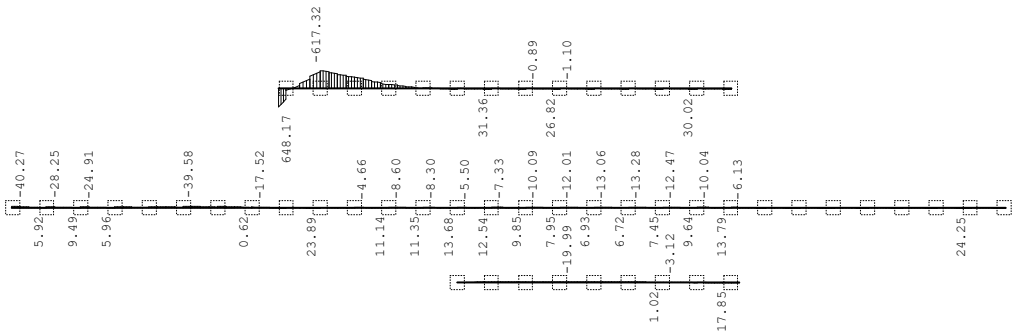
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 960.17 / min M3= -495.07 kNm

Opt. 7: KP



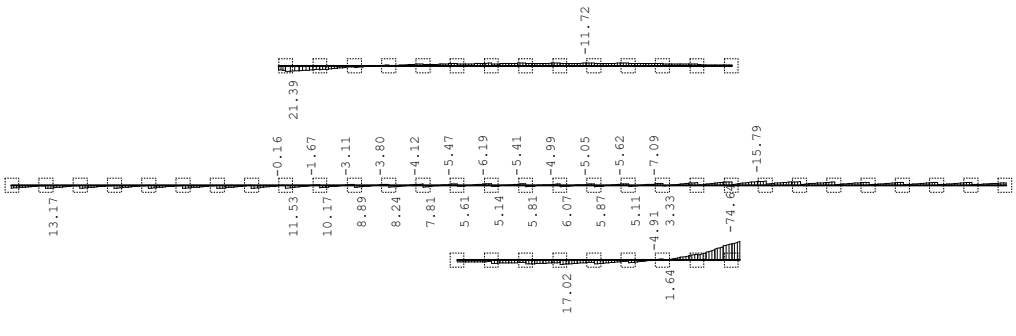
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 201.55 / min M3= -236.55 kNm

Opt. 8: voz na nasipu ispred



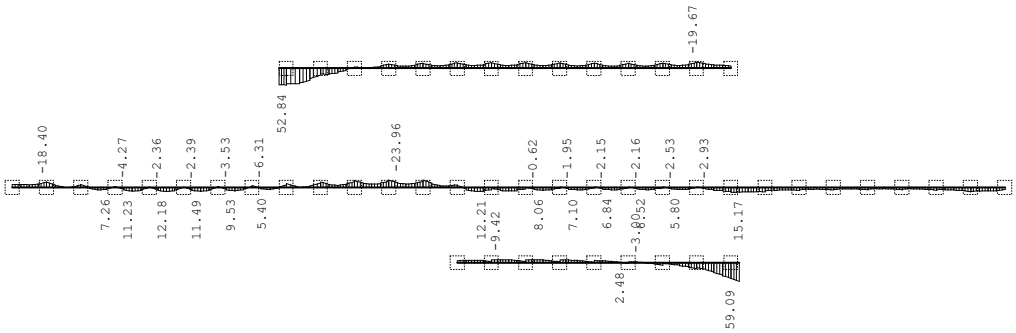
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 648.17 / min M3= -617.32 kNm

Opt. 9: voz na nasipu iza



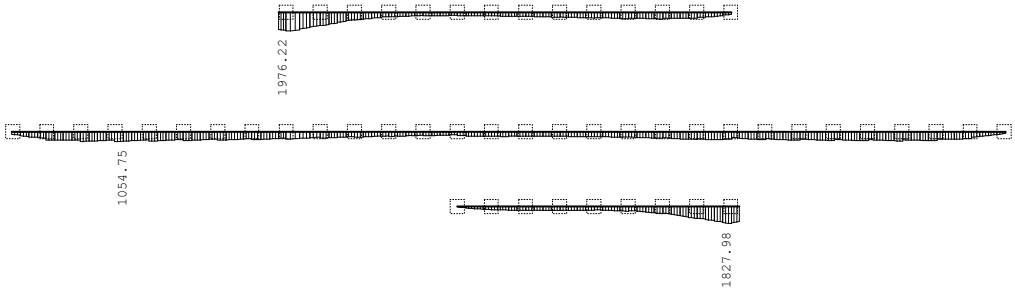
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 21.39 / min M3= -74.64 kNm

Opt. 10: voz ispod



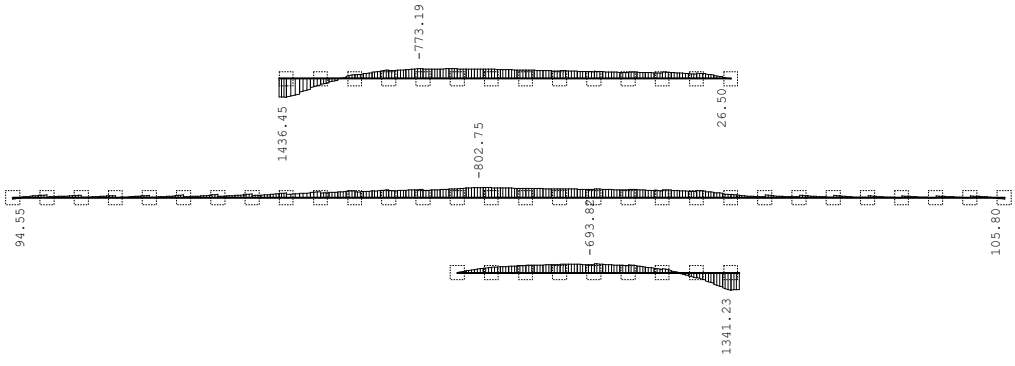
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 59.09 / min M3= -23.96 kNm

Opt. 11: komb temp 1



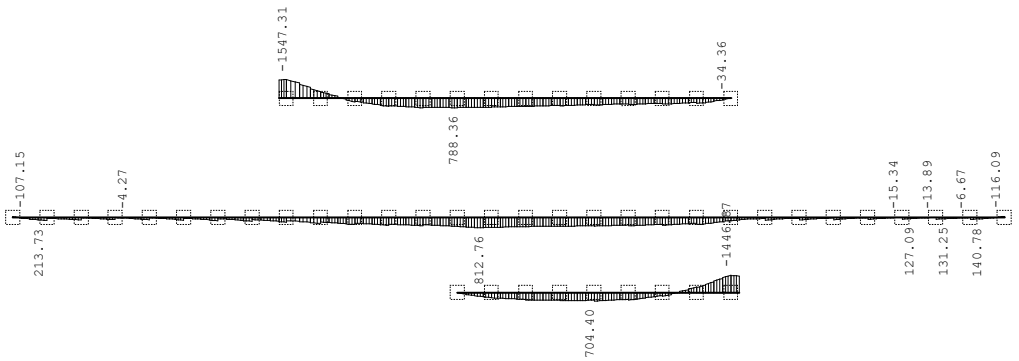
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 1976.22 / min M3= 69.90 kNm

Opt. 12: komb temp 2



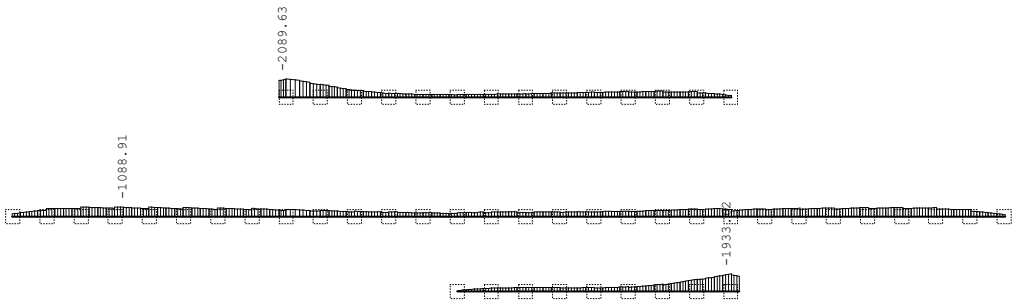
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 1436.45 / min M3= -802.75 kNm

Opt. 13: komb temp 3



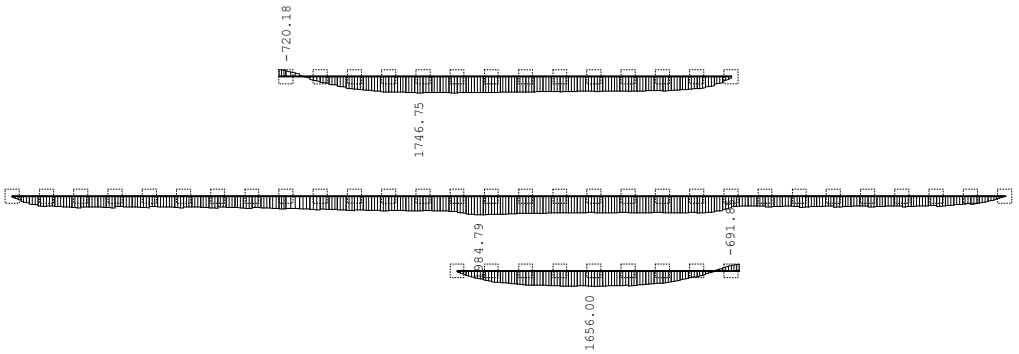
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 812.76 / min M3= -1547.31 kNm

Opt. 14: komb temp 4



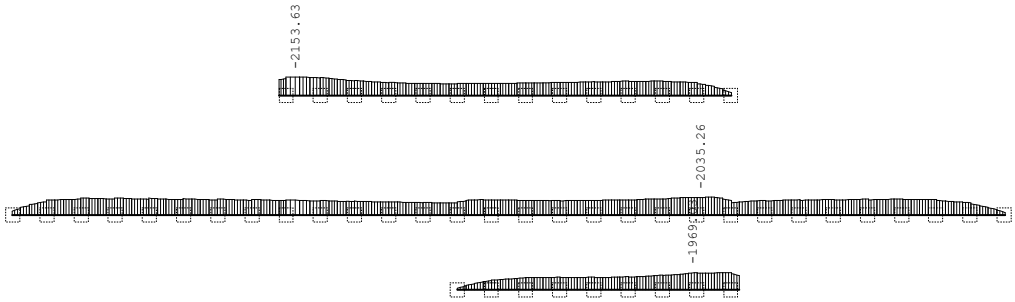
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= -71.09 / min M3= -2089.63 kNm

Opt. 15: komb temp 5



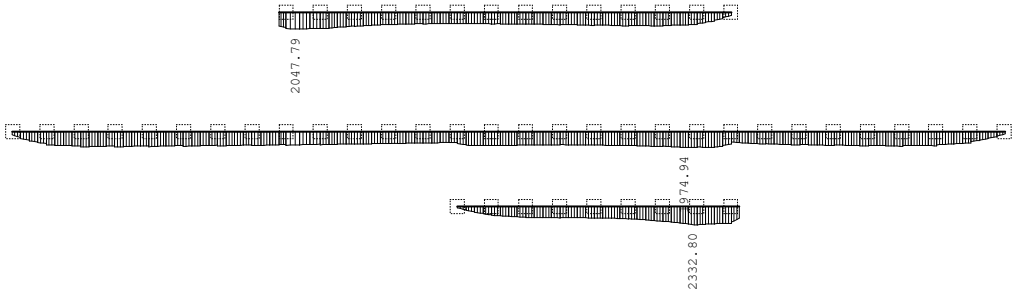
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 1984.79 / min M3= -720.18 kNm

Opt. 16: komb temp 6



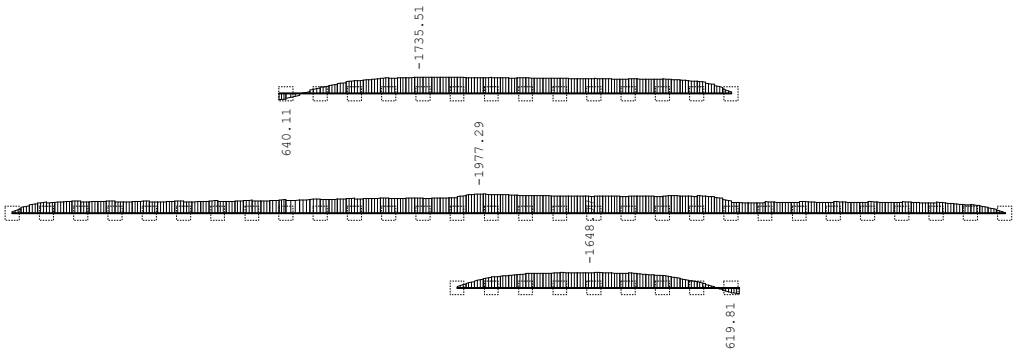
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= -163.04 / min M3= -2153.63 kNm

Opt. 17: komb temp 7



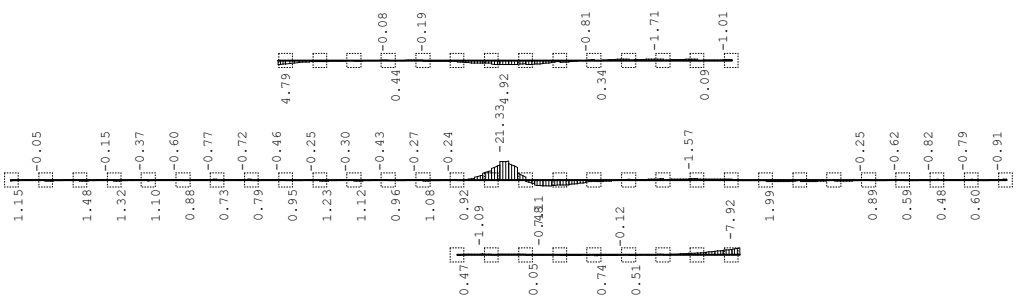
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 2332.80 / min M3= 176.92 kNm

Opt. 18: komb temp 8



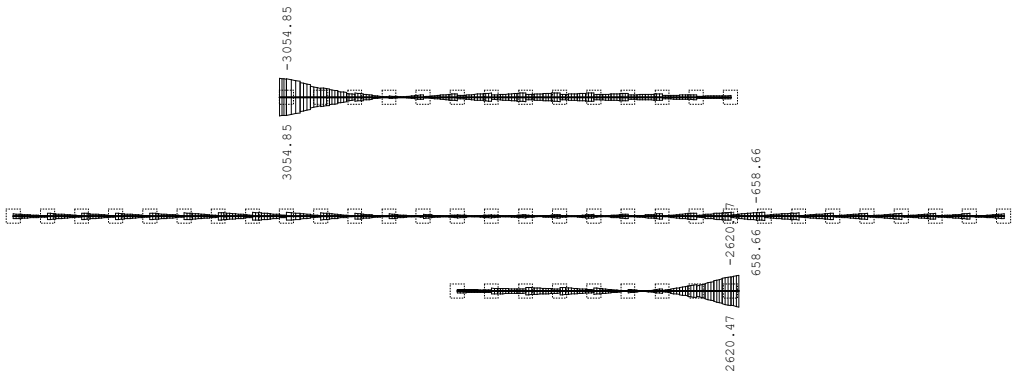
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 640.11 / min M3= -1977.29 kNm

Opt. 19: BU



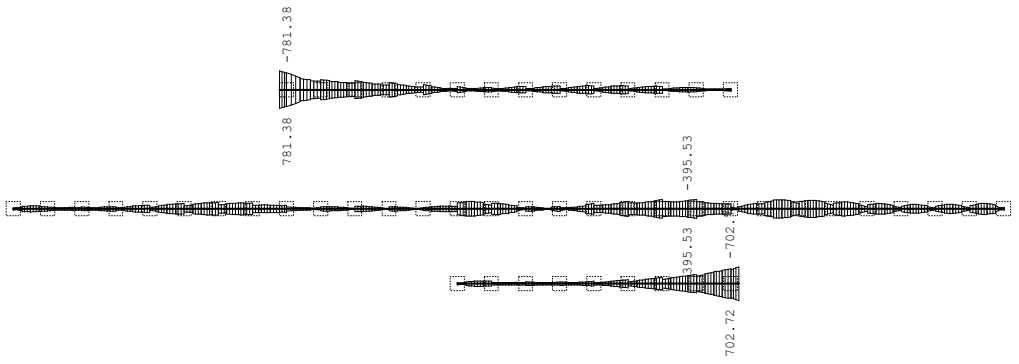
Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 7.11 / min M3= -21.33 kNm

Opt. 20: Sx



Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 3054.85 / min M3= -3054.85 kNm

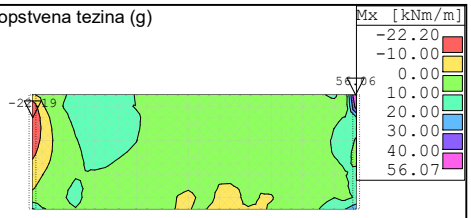
Opt. 21: Sy



Nivo: Ravan ploče 70cm [9.75 m]
Uticaji u gredi: max M3= 781.38 / min M3= -781.38 kNm

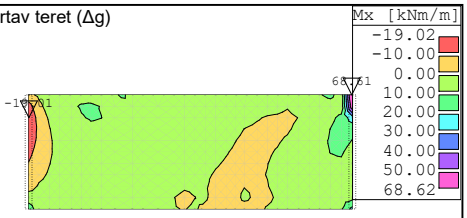
5.5.3 Зидови у рамовима 1, 2 и К1

Opt. 1: sopstvena tezina (g)



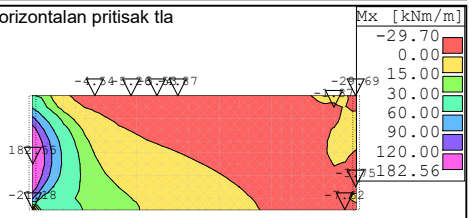
Ram: Ram 1
Uticaji u ploči: max Mx= 56.06 / min Mx= -22.19 kNm/m

Opt. 2: mrtav teret (Δg)



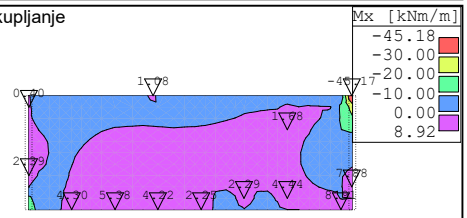
Ram: Ram 1
Uticaji u ploči: max Mx= 68.61 / min Mx= -19.01 kNm/m

Opt. 3: horizontalan pritisak tla



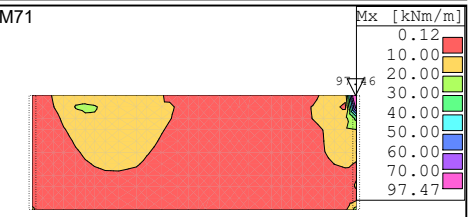
Ram: Ram 1
Uticaji u ploči: max Mx= 182.55 / min Mx= -29.69 kNm/m

Opt. 4: skupljanje



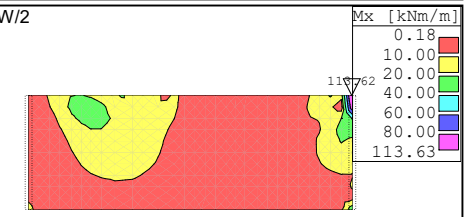
Ram: Ram 1
Uticaji u ploči: max Mx= 8.91 / min Mx= -45.17 kNm/m

Opt. 5: LM71



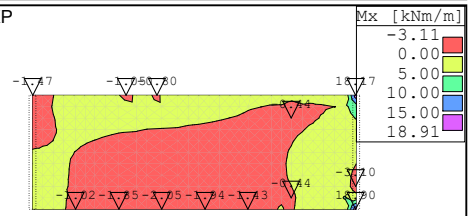
Ram: Ram 1
Uticaji u ploči: max Mx= 97.46 / min Mx= 0.13 kNm/m

Opt. 6: SW/2



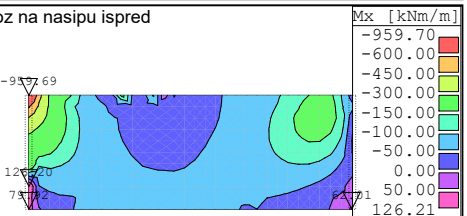
Ram: Ram 1
Uticaji u ploči: max Mx= 113.62 / min Mx= 0.19 kNm/m

Opt. 7: KP



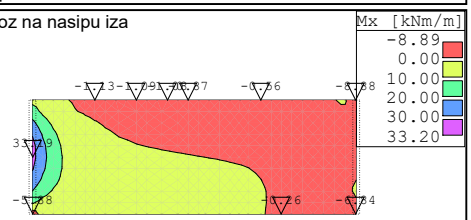
Ram: Ram 1
Uticaji u ploči: max Mx= 18.90 / min Mx= -3.10 kNm/m

Opt. 8: voz na nasipu ispred



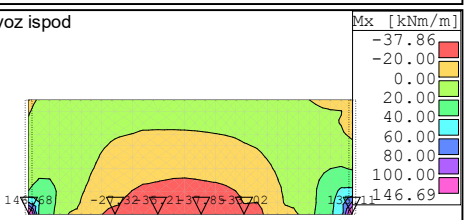
Ram: Ram 1
Uticaji u ploči: max Mx= 126.20 / min Mx= -959.69 kNm/m

Opt. 9: voz na nasipu iza



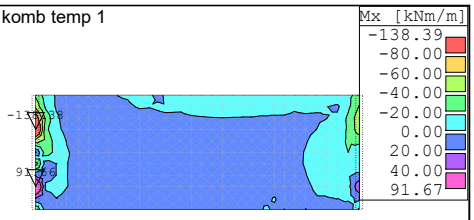
Ram: Ram 1
Uticaji u ploči: max Mx= 33.19 / min Mx= -8.88 kNm/m

Opt. 10: voz ispod



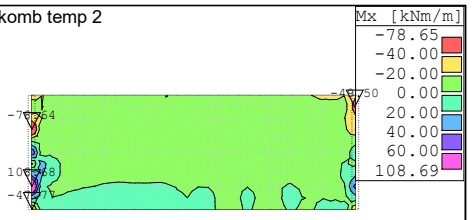
Ram: Ram 1
Uticaji u ploči: max Mx= 146.68 / min Mx= -37.85 kNm/m

Opt. 11: komb temp 1



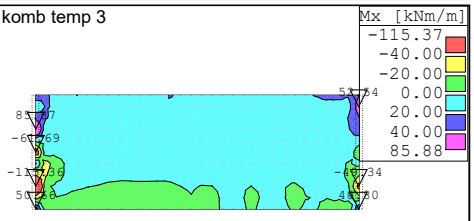
Ram: Ram 1
Uticaji u ploči: max Mx= 91.66 / min Mx= -138.38 kNm/m

Opt. 12: komb temp 2



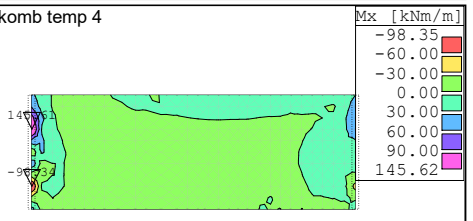
Ram: Ram 1
Uticaji u ploči: max Mx= 108.68 / min Mx= -78.64 kNm/m

Opt. 13: komb temp 3



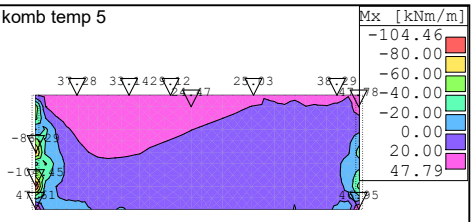
Ram: Ram 1
Uticaji u ploči: max Mx= 85.87 / min Mx= -115.36 kNm/m

Opt. 14: komb temp 4



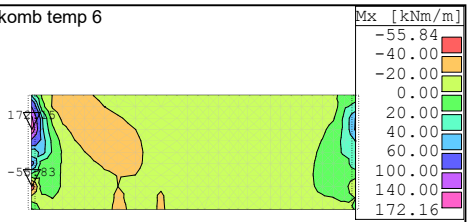
Ram: Ram 1
Uticaji u ploči: max Mx= 145.61 / min Mx= -98.34 kNm/m

Opt. 15: komb temp 5



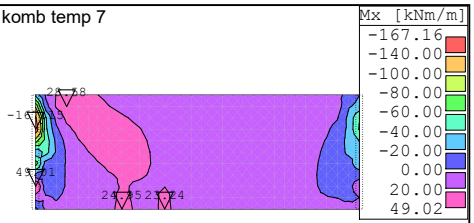
Ram: Ram 1
Uticaji u ploči: max Mx= 47.78 / min Mx= -104.45 kNm/m

Opt. 16: komb temp 6



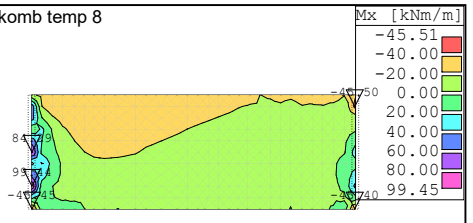
Ram: Ram 1
Uticaji u ploči: max Mx= 172.15 / min Mx= -55.83 kNm/m

Opt. 17: komb temp 7



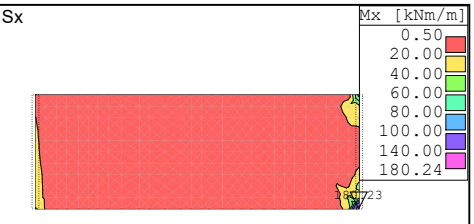
Ram: Ram 1
Uticaji u ploči: max Mx= 49.01 / min Mx= -167.15 kNm/m

Opt. 18: komb temp 8



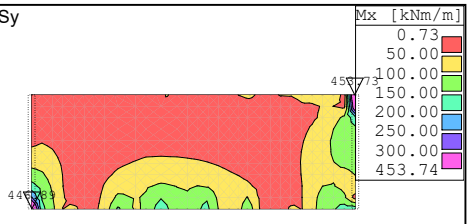
Ram: Ram 1
Uticaji u ploči: max Mx= 99.44 / min Mx= -45.50 kNm/m

Opt. 20: Sx



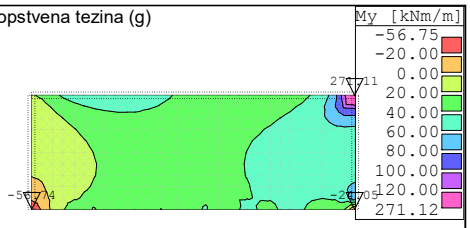
Ram: Ram 1
Uticaji u ploči: max Mx= 180.23 / min Mx= 0.51 kNm/m

Opt. 21: Sy



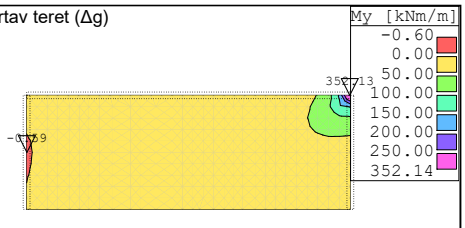
Ram: Ram 1
Uticaji u ploči: max Mx= 453.73 / min Mx= 0.74 kNm/m

Opt. 1: sopstvena tezina (g)



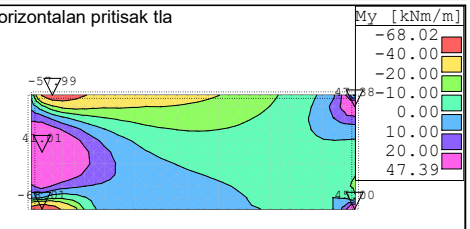
Ram: Ram 1
Uticaji u ploči: max My= 271.11 / min My= -56.74 kNm/m

Opt. 2: mrtav teret (Δg)



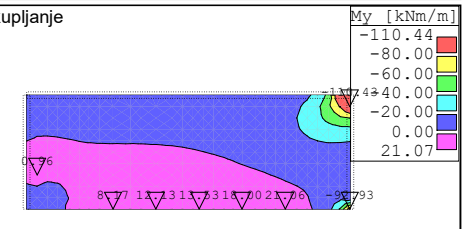
Ram: Ram 1
Uticaji u ploči: max My= 352.13 / min My= -0.59 kNm/m

Opt. 3: horizontalan pritisak tla



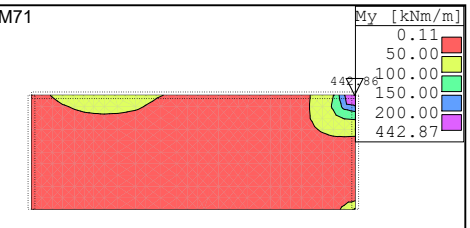
Ram: Ram 1
Uticaji u ploči: max My= 47.38 / min My= -68.01 kNm/m

Opt. 4: skupljanje



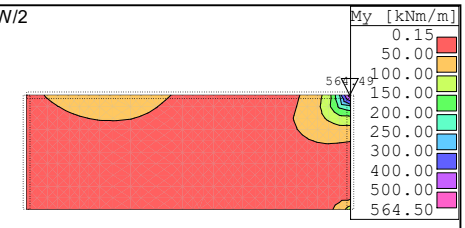
Ram: Ram 1
Uticaji u ploči: max My= 21.06 / min My= -110.43 kNm/m

Opt. 5: LM71



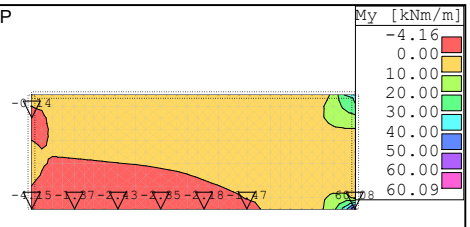
Ram: Ram 1
Uticaji u ploči: max My= 442.86 / min My= 0.12 kNm/m

Opt. 6: SW/2



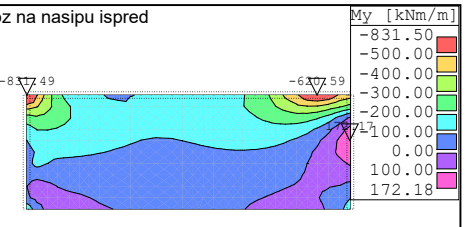
Ram: Ram 1
Uticaji u ploči: max My= 564.49 / min My= 0.16 kNm/m

Opt. 7: KP



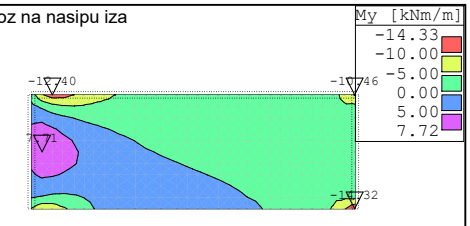
Ram: Ram 1
Uticaji u ploči: max My= 60.08 / min My= -4.15 kNm/m

Opt. 8: voz na nasipu ispred



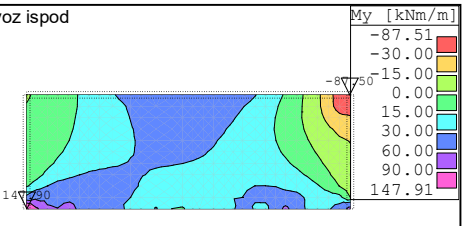
Ram: Ram 1
Uticaji u ploči: max My= 172.17 / min My= -831.49 kNm/m

Opt. 9: voz na nasipu iza



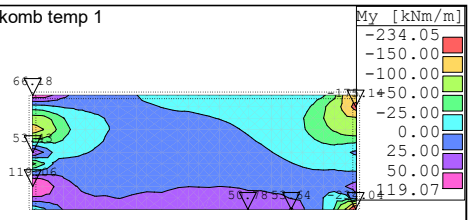
Ram: Ram 1
Uticaji u ploči: max My= 7.71 / min My= -14.32 kNm/m

Opt. 10: voz ispod



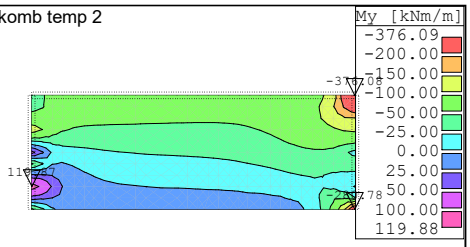
Ram: Ram 1
Uticaji u ploči: max My= 147.90 / min My= -87.50 kNm/m

Opt. 11: komb temp 1



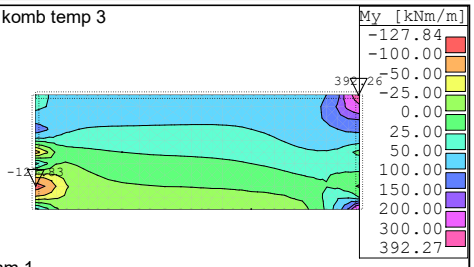
Ram: Ram 1
Uticaji u ploči: max My= 119.06 / min My= -234.04 kNm/m

Opt. 12: komb temp 2



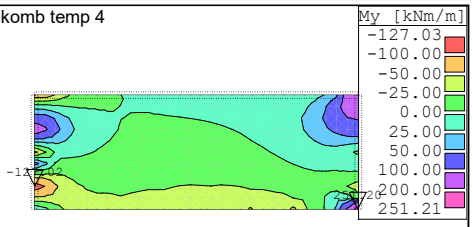
Ram: Ram 1
Uticaji u ploči: max My= 119.87 / min My= -376.08 kNm/m

Opt. 13: komb temp 3



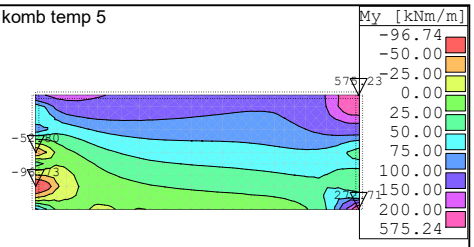
Ram: Ram 1
Uticaji u ploči: max My= 392.26 / min My= -127.83 kNm/m

Opt. 14: komb temp 4



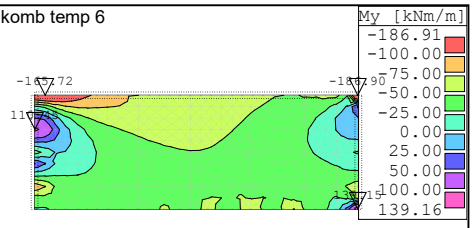
Ram: Ram 1
Uticaji u ploči: max My= 251.20 / min My= -127.02 kNm/m

Opt. 15: komb temp 5



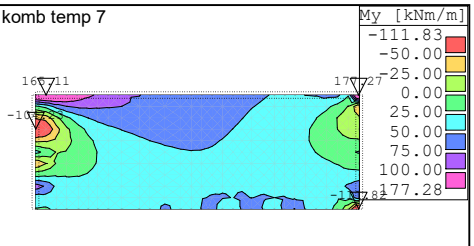
Ram: Ram 1
Uticaji u ploči: max My= 575.23 / min My= -96.73 kNm/m

Opt. 16: komb temp 6



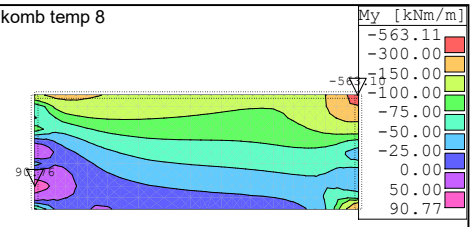
Ram: Ram 1
Uticaji u ploči: max My= 139.15 / min My= -186.90 kNm/m

Opt. 17: komb temp 7



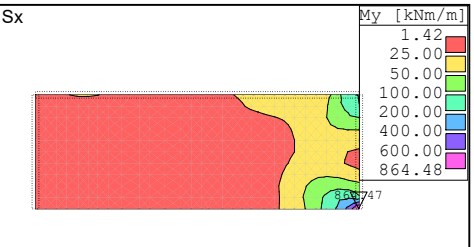
Ram: Ram 1
Uticaji u ploči: max My= 177.27 / min My= -111.82 kNm/m

Opt. 18: komb temp 8



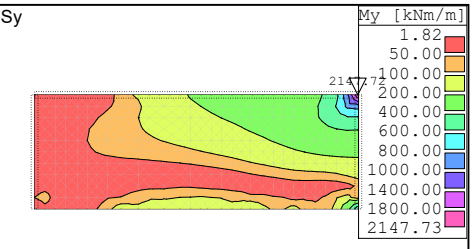
Ram: Ram 1
Uticaji u ploči: max My= 90.76 / min My= -563.10 kNm/m

Opt. 20: Sx



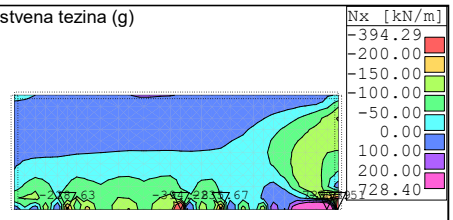
Ram: Ram 1
Uticaji u ploči: max My= 864.47 / min My= 1.43 kNm/m

Opt. 21: Sy



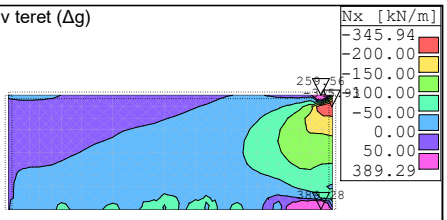
Ram: Ram 1
Uticaji u ploči: max My= 2147.72 / min My= 1.83 kNm/m

Opt. 1: sopstvena tezina (g)



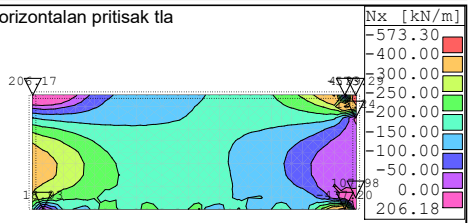
Ram: Ram 1
Uticaji u ploči: max Nx= 728.39 / min Nx= -394.28 kN/m

Opt. 2: mrtav teret (Δg)



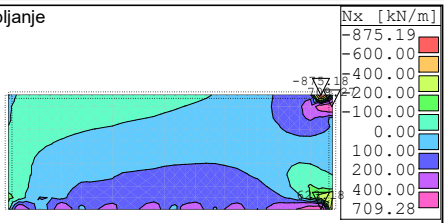
Ram: Ram 1
Uticaji u ploči: max Nx= 389.28 / min Nx= -345.93 kN/m

Opt. 3: horizontalan pritisak tla



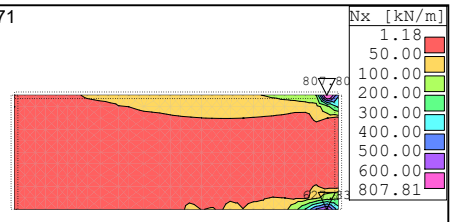
Ram: Ram 1
Uticaji u ploči: max Nx= 206.17 / min Nx= -573.29 kN/m

Opt. 4: skupljanje



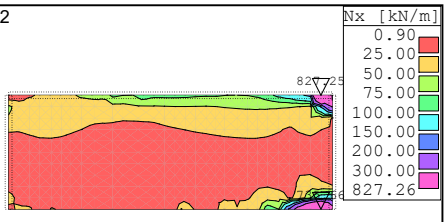
Ram: Ram 1
Uticaji u ploči: max Nx= 709.27 / min Nx= -875.18 kN/m

Opt. 5: LM71



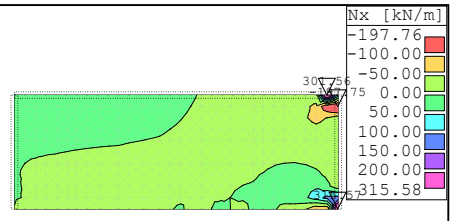
Ram: Ram 1
Uticaji u ploči: max Nx= 807.80 / min Nx= 1.19 kN/m

Opt. 6: SW/2



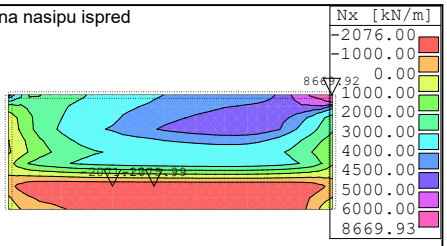
Ram: Ram 1
Uticaji u ploči: max Nx= 827.25 / min Nx= 0.91 kN/m

Opt. 7: KP



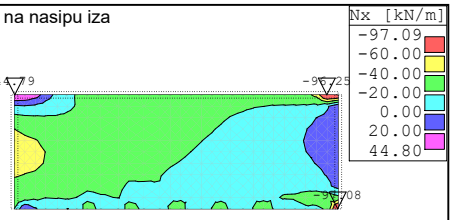
Ram: Ram 1
Uticaji u ploči: max Nx= 315.57 / min Nx= -197.75 kN/m

Opt. 8: voz na nasipu ispred



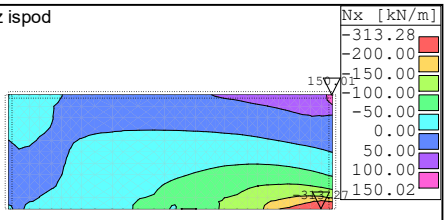
Ram: Ram 1
Uticaji u ploči: max Nx= 8669.92 / min Nx= -2075.99 kN/m

Opt. 9: voz na nasipu iza



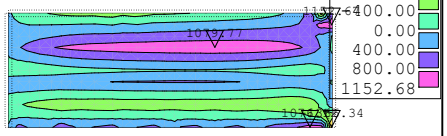
Ram: Ram 1
Uticaji u ploči: max Nx= 44.79 / min Nx= -97.08 kN/m

Opt. 10: voz ispod



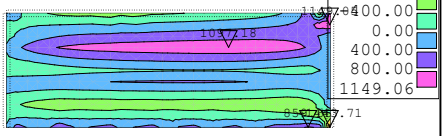
Ram: Ram 1
Uticaji u ploči: max Nx= 150.01 / min Nx= -313.27 kN/m

Opt. 11: komb temp 1



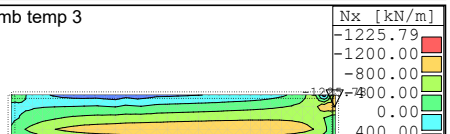
Ram: Ram 1
Uticaji u ploči: max Nx= 1152.67 / min Nx= -1366.34 kN/m

Opt. 12: komb temp 2



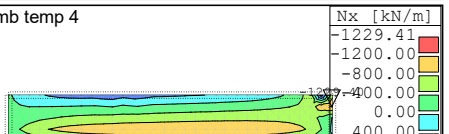
Ram: Ram 1
Uticaji u ploči: max Nx= 1149.05 / min Nx= -1443.71 kN/m

Opt. 13: komb temp 3



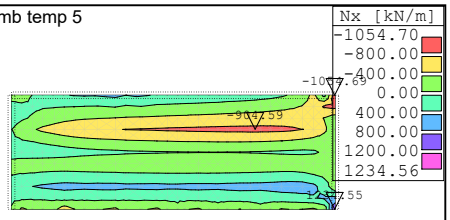
Ram: Ram 1
Uticaji u ploči: max Nx= 1537.38 / min Nx= -1225.78 kN/m

Opt. 14: komb temp 4



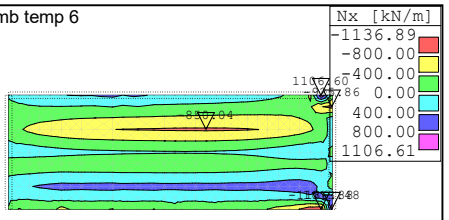
Ram: Ram 1
Uticaji u ploči: max Nx= 1460.00 / min Nx= -1229.40 kN/m

Opt. 15: komb temp 5



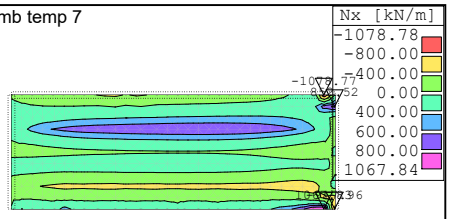
Ram: Ram 1
Uticaji u ploči: max Nx= 1234.55 / min Nx= -1054.69 kN/m

Opt. 16: komb temp 6



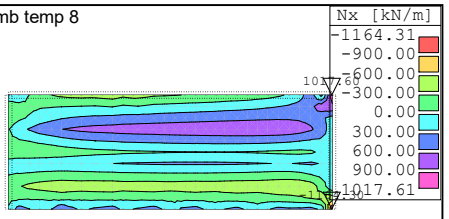
Ram: Ram 1
Uticaji u ploči: max Nx= 1106.60 / min Nx= -1136.88 kN/m

Opt. 17: komb temp 7



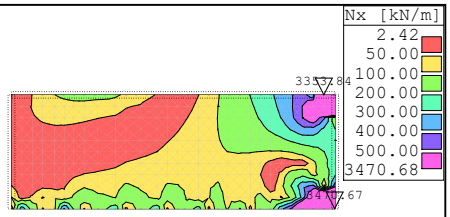
Ram: Ram 1
Uticaji u ploči: max Nx= 1067.83 / min Nx= -1078.77 kN/m

Opt. 18: komb temp 8



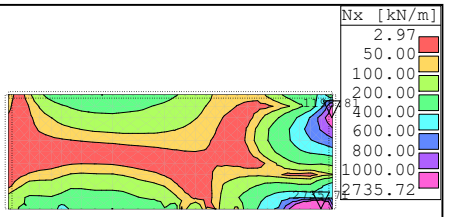
Ram: Ram 1
Uticaji u ploči: max Nx= 1017.60 / min Nx= -1164.30 kN/m

Opt. 20: Sx



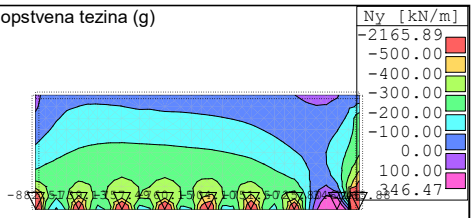
Ram: Ram 1
Uticaji u ploči: max Nx= 3470.67 / min Nx= 2.43 kN/m

Opt. 21: Sy



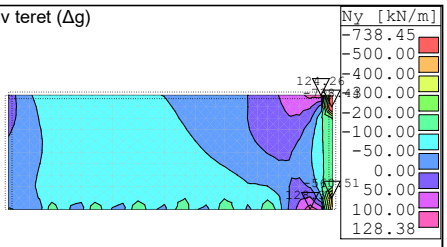
Ram: Ram 1
Uticaji u ploči: max Nx= 2735.71 / min Nx= 2.98 kN/m

Opt. 1: sopstvena tezina (g)



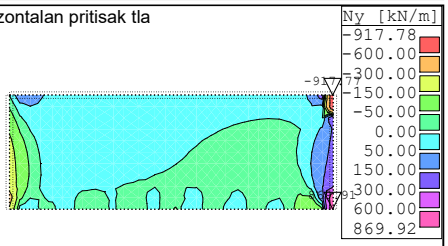
Ram: Ram 1
Uticaji u ploči: max Ny= 346.46 / min Ny= -2165.88 kN/m

Opt. 2: mrtav teret (Δg)



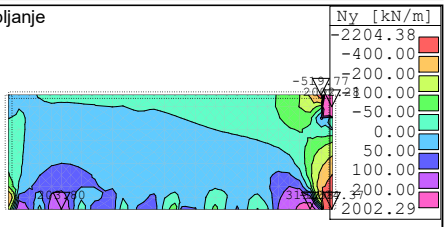
Ram: Ram 1
Uticaji u ploči: max Ny= 128.37 / min Ny= -738.44 kN/m

Opt. 3: horizontalan pritisak tla



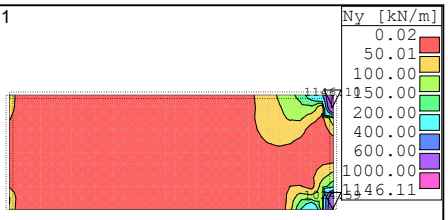
Ram: Ram 1
Uticaji u ploči: max Ny= 869.91 / min Ny= -917.77 kN/m

Opt. 4: skupljanje



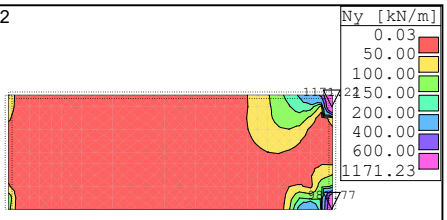
Ram: Ram 1
Uticaji u ploči: max Ny= 2002.28 / min Ny= -2204.37 kN/m

Opt. 5: LM71



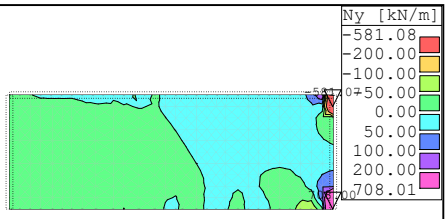
Ram: Ram 1
Uticaji u ploči: max Ny= 1146.10 / min Ny= 0.03 kN/m

Opt. 6: SW/2



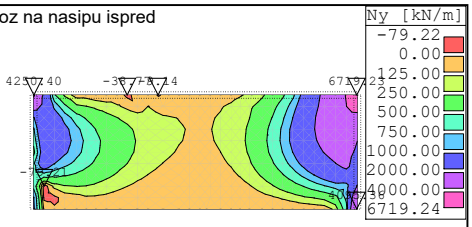
Ram: Ram 1
Uticaji u ploči: max Ny= 1171.22 / min Ny= 0.04 kN/m

Opt. 7: KP



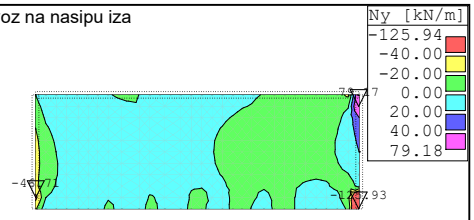
Ram: Ram 1
Uticaji u ploči: max Ny= 708.00 / min Ny= -581.07 kN/m

Opt. 8: voz na nasipu ispred



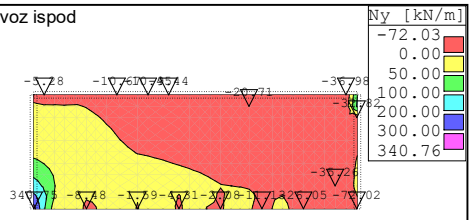
Ram: Ram 1
Uticaji u ploči: max Ny= 6719.23 / min Ny= -79.21 kN/m

Opt. 9: voz na nasipu iza

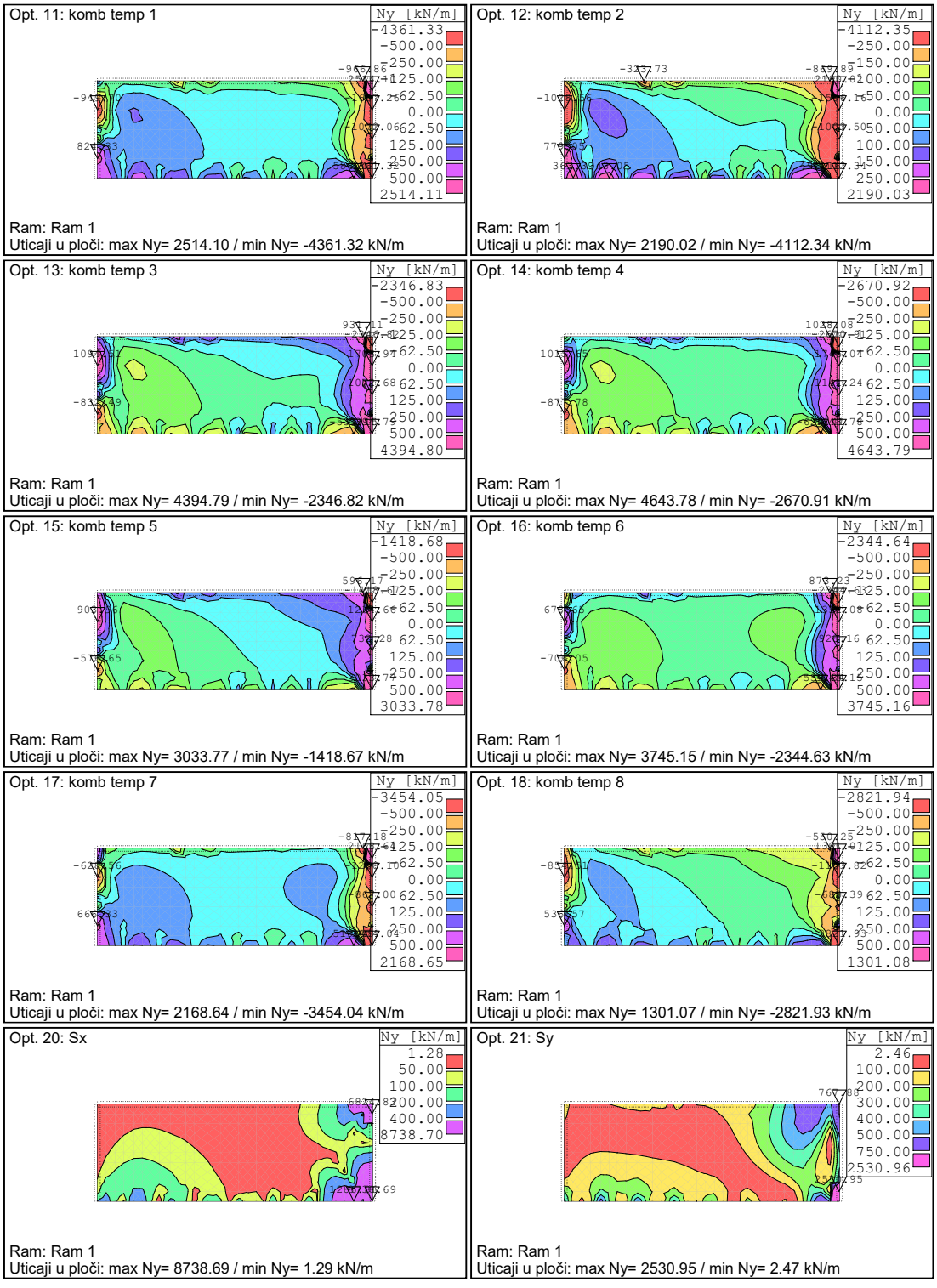


Ram: Ram 1
Uticaji u ploči: max Ny= 79.17 / min Ny= -125.93 kN/m

Opt. 10: voz ispod

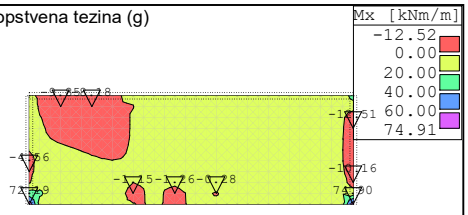


Ram: Ram 1
Uticaji u ploči: max Ny= 340.75 / min Ny= -72.02 kN/m



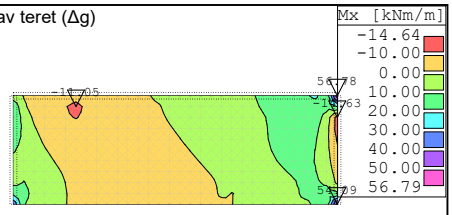
Утицаји у зиду у раму 5 су слични приказаним утицајима у зиду у раму 1.

Opt. 1: sopstvena tezina (g)



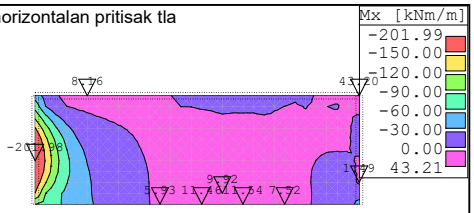
Ram: Ram 2
Uticaji u ploči: max Mx= 74.90 / min Mx= -12.51 kNm/m

Opt. 2: mrtav teret (Δg)



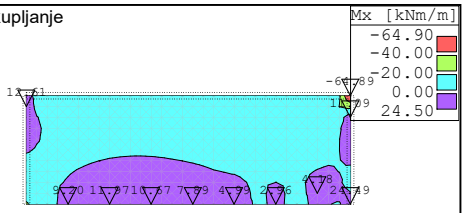
Ram: Ram 2
Uticaji u ploči: max Mx= 56.78 / min Mx= -14.63 kNm/m

Opt. 3: horizontalan pritisak tla



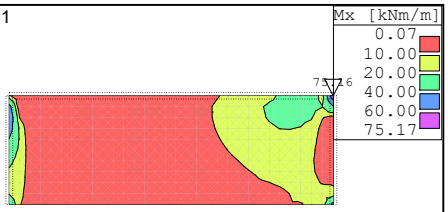
Ram: Ram 2
Uticaji u ploči: max Mx= 43.20 / min Mx= -201.98 kNm/m

Opt. 4: skupljanje



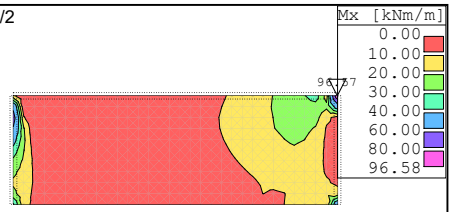
Ram: Ram 2
Uticaji u ploči: max Mx= 24.49 / min Mx= -64.89 kNm/m

Opt. 5: LM71



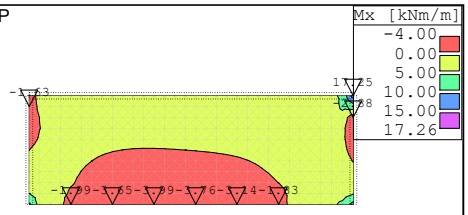
Ram: Ram 2
Uticaji u ploči: max Mx= 75.16 / min Mx= 0.08 kNm/m

Opt. 6: SW/2



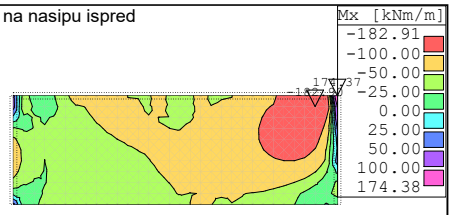
Ram: Ram 2
Uticaji u ploči: max Mx= 96.57 / min Mx= -0.00 kNm/m

Opt. 7: KP



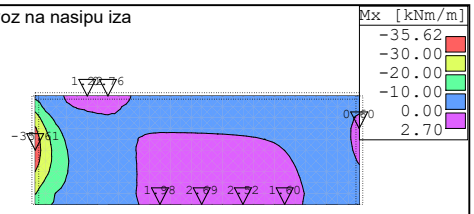
Ram: Ram 2
Uticaji u ploči: max Mx= 17.25 / min Mx= -3.99 kNm/m

Opt. 8: voz na nasipu ispred



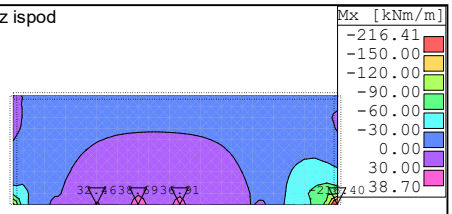
Ram: Ram 2
Uticaji u ploči: max Mx= 174.37 / min Mx= -182.90 kNm/m

Opt. 9: voz na nasipu iza



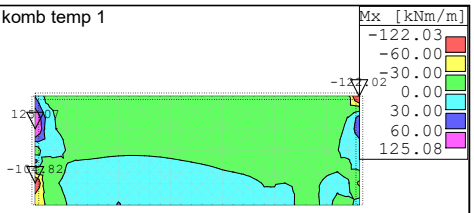
Ram: Ram 2
Uticaji u ploči: max Mx= 2.69 / min Mx= -35.61 kNm/m

Opt. 10: voz ispod



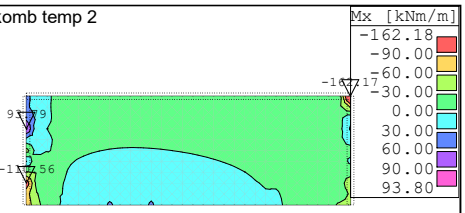
Ram: Ram 2
Uticaji u ploči: max Mx= 38.69 / min Mx= -216.40 kNm/m

Opt. 11: komb temp 1



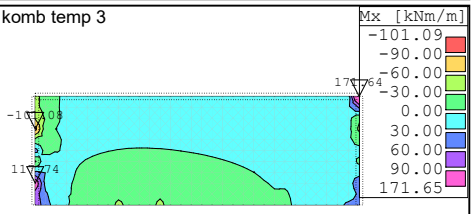
Ram: Ram 2
Uticaji u ploči: max Mx= 125.07 / min Mx= -122.02 kNm/m

Opt. 12: komb temp 2



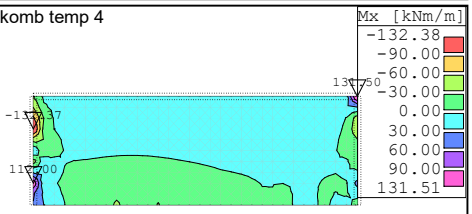
Ram: Ram 2
Uticaji u ploči: max Mx= 93.79 / min Mx= -162.17 kNm/m

Opt. 13: komb temp 3



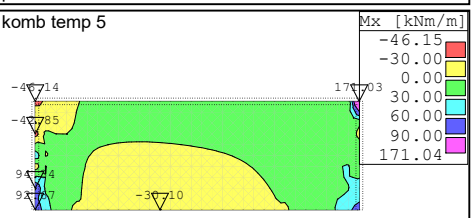
Ram: Ram 2
Uticaji u ploči: max Mx= 171.64 / min Mx= -101.08 kNm/m

Opt. 14: komb temp 4



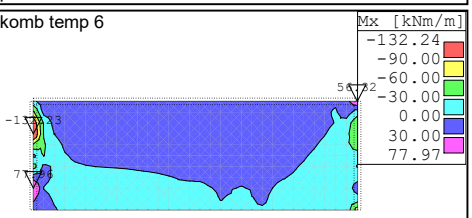
Ram: Ram 2
Uticaji u ploči: max Mx= 131.50 / min Mx= -132.37 kNm/m

Opt. 15: komb temp 5



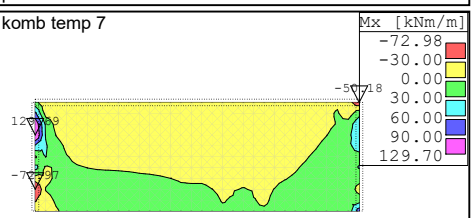
Ram: Ram 2
Uticaji u ploči: max Mx= 171.03 / min Mx= -46.14 kNm/m

Opt. 16: komb temp 6



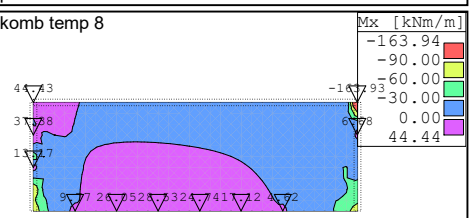
Ram: Ram 2
Uticaji u ploči: max Mx= 77.96 / min Mx= -132.23 kNm/m

Opt. 17: komb temp 7



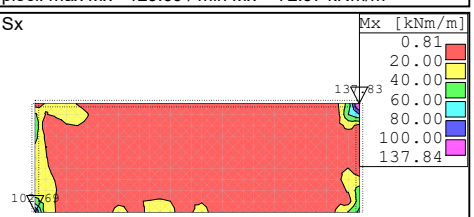
Ram: Ram 2
Uticaji u ploči: max Mx= 129.69 / min Mx= -72.97 kNm/m

Opt. 18: komb temp 8



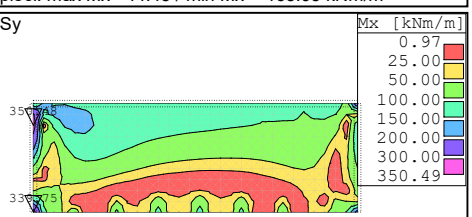
Ram: Ram 2
Uticaji u ploči: max Mx= 44.43 / min Mx= -163.93 kNm/m

Opt. 20: Sx



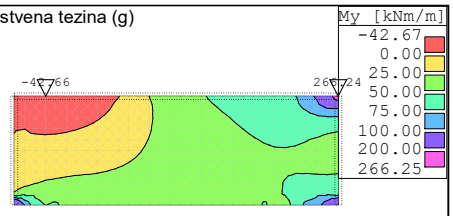
Ram: Ram 2
Uticaji u ploči: max Mx= 137.83 / min Mx= 0.82 kNm/m

Opt. 21: Sy



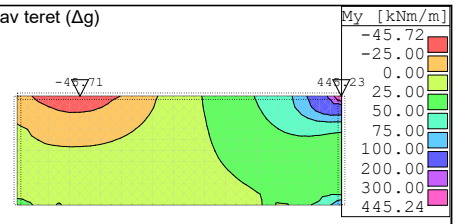
Ram: Ram 2
Uticaji u ploči: max Mx= 350.48 / min Mx= 0.98 kNm/m

Opt. 1: sopstvena tezina (g)



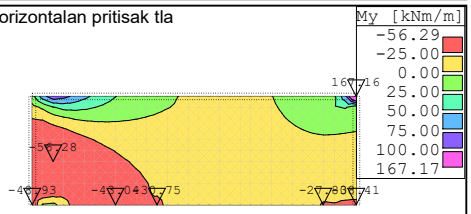
Ram: Ram 2
Uticaji u ploči: max My= 266.24 / min My= -42.66 kNm/m

Opt. 2: mrtav teret (Δg)



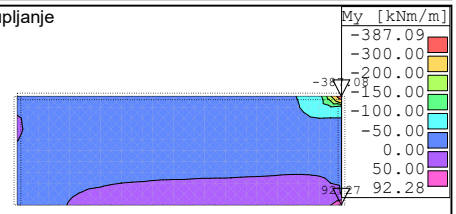
Ram: Ram 2
Uticaji u ploči: max My= 445.23 / min My= -45.71 kNm/m

Opt. 3: horizontalan pritisak tla



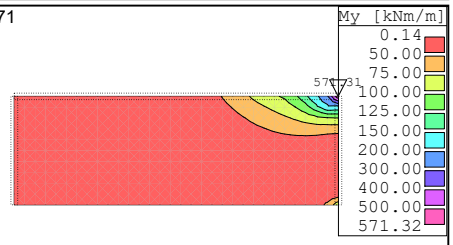
Ram: Ram 2
Uticaji u ploči: max My= 167.16 / min My= -56.28 kNm/m

Opt. 4: skupljanje



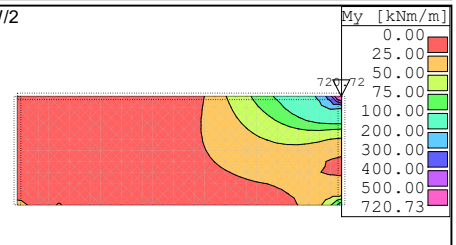
Ram: Ram 2
Uticaji u ploči: max My= 92.27 / min My= -387.08 kNm/m

Opt. 5: LM71



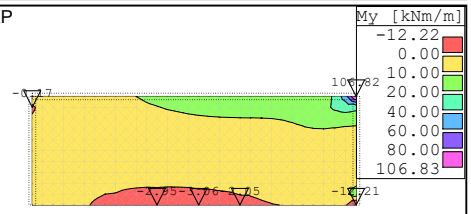
Ram: Ram 2
Uticaji u ploči: max My= 571.31 / min My= 0.15 kNm/m

Opt. 6: SW/2



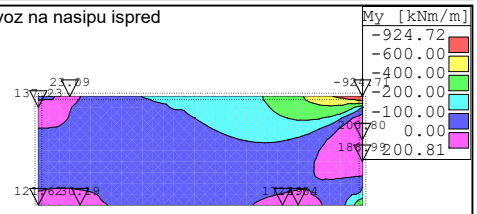
Ram: Ram 2
Uticaji u ploči: max My= 720.72 / min My= 0.00 kNm/m

Opt. 7: KP



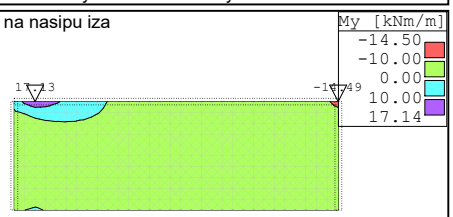
Ram: Ram 2
Uticaji u ploči: max My= 106.82 / min My= -12.21 kNm/m

Opt. 8: voz na nasipu ispred



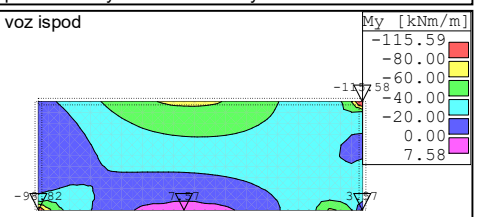
Ram: Ram 2
Uticaji u ploči: max My= 200.80 / min My= -924.71 kNm/m

Opt. 9: voz na nasipu iza



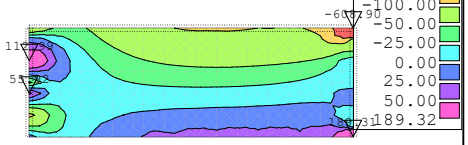
Ram: Ram 2
Uticaji u ploči: max My= 17.13 / min My= -14.49 kNm/m

Opt. 10: voz ispod



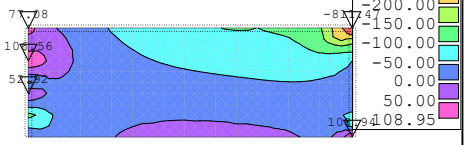
Ram: Ram 2
Uticaji u ploči: max My= 7.57 / min My= -115.58 kNm/m

Opt. 11: komb temp 1



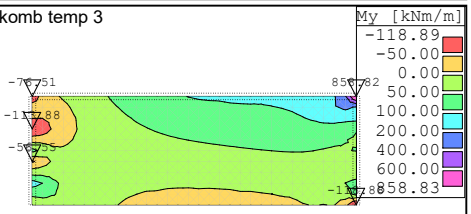
Ram: Ram 2
Uticaji u ploči: max My= 189.31 / min My= -608.90 kNm/m

Opt. 12: komb temp 2



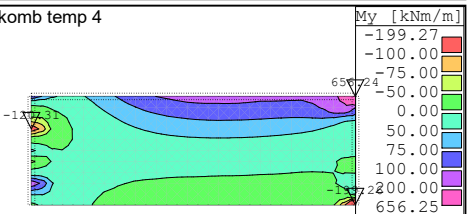
Ram: Ram 2
Uticaji u ploči: max My= 108.94 / min My= -811.47 kNm/m

Opt. 13: komb temp 3



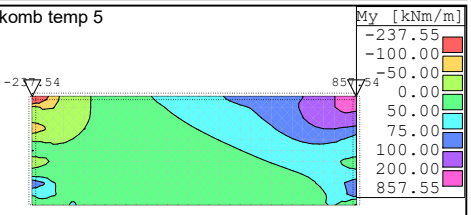
Ram: Ram 2
Uticaji u ploči: max My= 858.82 / min My= -118.88 kNm/m

Opt. 14: komb temp 4



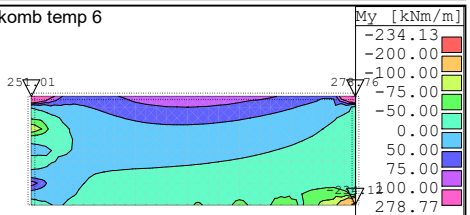
Ram: Ram 2
Uticaji u ploči: max My= 656.24 / min My= -199.26 kNm/m

Opt. 15: komb temp 5



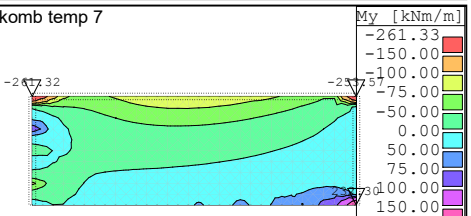
Ram: Ram 2
Uticaji u ploči: max My= 857.54 / min My= -237.54 kNm/m

Opt. 16: komb temp 6



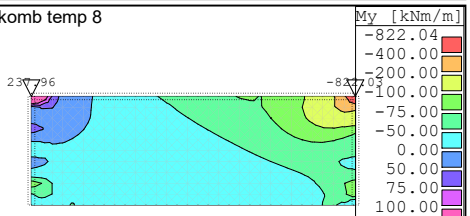
Ram: Ram 2
Uticaji u ploči: max My= 278.76 / min My= -234.12 kNm/m

Opt. 17: komb temp 7



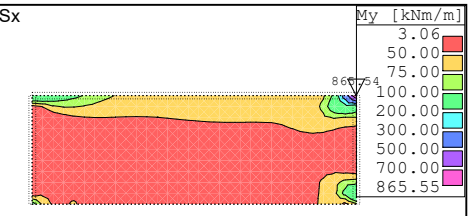
Ram: Ram 2
Uticaji u ploči: max My= 232.30 / min My= -261.32 kNm/m

Opt. 18: komb temp 8



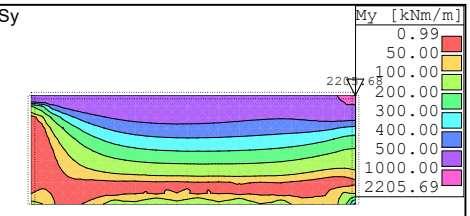
Ram: Ram 2
Uticaji u ploči: max My= 237.96 / min My= -822.03 kNm/m

Opt. 20: Sx



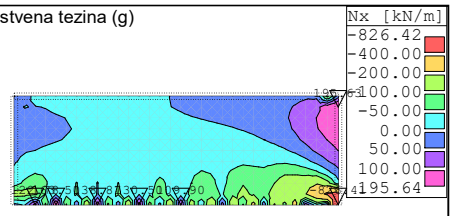
Ram: Ram 2
Uticaji u ploči: max My= 865.54 / min My= 3.07 kNm/m

Opt. 21: Sy



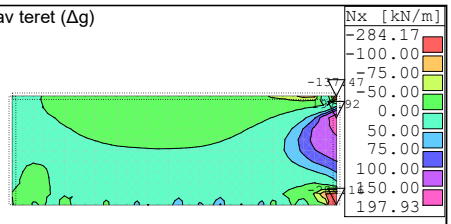
Ram: Ram 2
Uticaji u ploči: max My= 2205.68 / min My= 1.00 kNm/m

Opt. 1: sopstvena tezina (g)



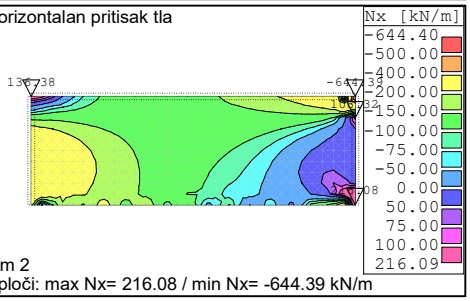
Ram: Ram 2
Uticaji u ploči: max Nx= 195.63 / min Nx= -826.41 kN/m

Opt. 2: mrtav teret (Δg)



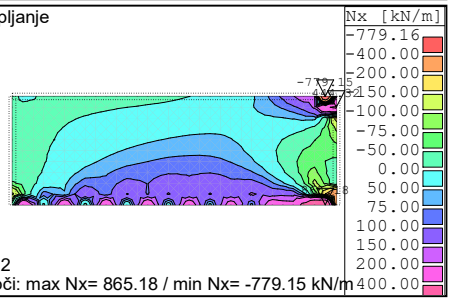
Ram: Ram 2
Uticaji u ploči: max Nx= 197.92 / min Nx= -284.16 kN/m

Opt. 3: horizontalan pritisak tla



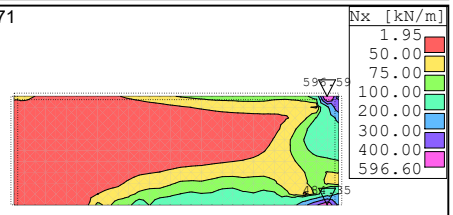
Ram: Ram 2
Uticaji u ploči: max Nx= 216.08 / min Nx= -644.39 kN/m

Opt. 4: skupljanje



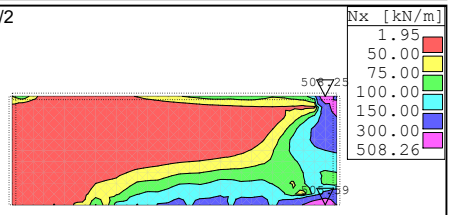
Ram: Ram 2
Uticaji u ploči: max Nx= 865.18 / min Nx= -779.15 kN/m

Opt. 5: LM71



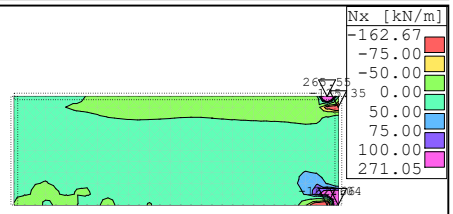
Ram: Ram 2
Uticaji u ploči: max Nx= 596.59 / min Nx= 1.96 kN/m

Opt. 6: SW/2



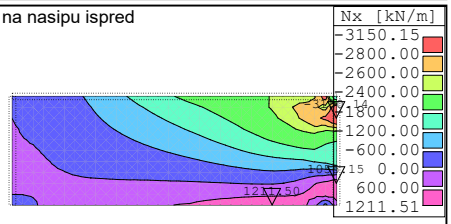
Ram: Ram 2
Uticaji u ploči: max Nx= 508.25 / min Nx= 1.96 kN/m

Opt. 7: KP



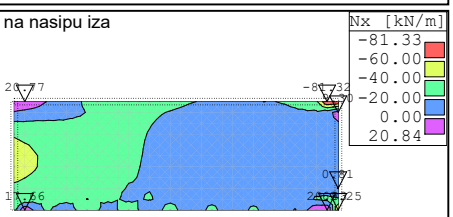
Ram: Ram 2
Uticaji u ploči: max Nx= 271.04 / min Nx= -162.66 kN/m

Opt. 8: voz na nasipu ispred



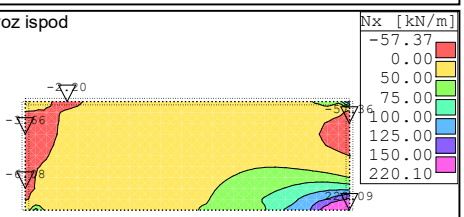
Ram: Ram 2
Uticaji u ploči: max Nx= 1211.50 / min Nx= -3150.14 kN/m

Opt. 9: voz na nasipu iza



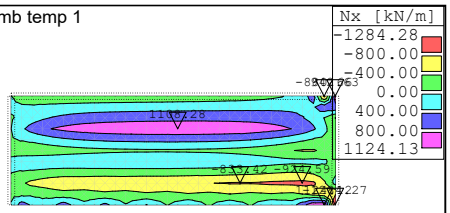
Ram: Ram 2
Uticaji u ploči: max Nx= 20.83 / min Nx= -81.32 kN/m

Opt. 10: voz ispod



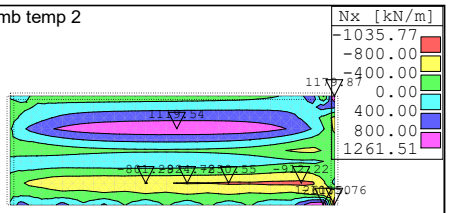
Ram: Ram 2
Uticaji u ploči: max Nx= 220.09 / min Nx= -57.36 kN/m

Opt. 11: komb temp 1



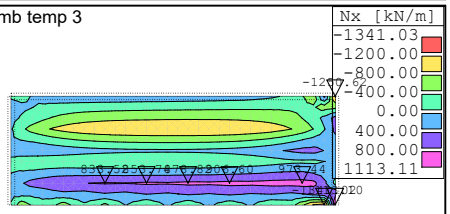
Ram: Ram 2
Uticaji u ploči: max Nx= 1124.12 / min Nx= -1284.27 kN/m

Opt. 12: komb temp 2



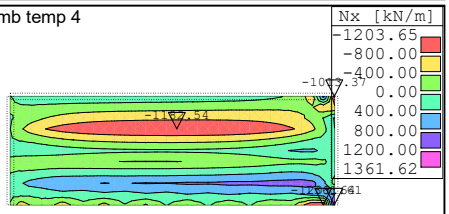
Ram: Ram 2
Uticaji u ploči: max Nx= 1261.50 / min Nx= -1035.76 kN/m

Opt. 13: komb temp 3



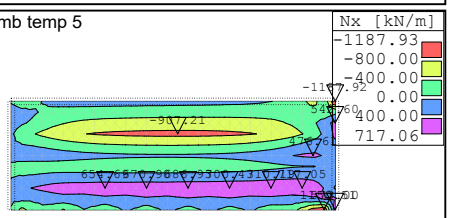
Ram: Ram 2
Uticaji u ploči: max Nx= 1113.10 / min Nx= -1341.02 kN/m

Opt. 14: komb temp 4



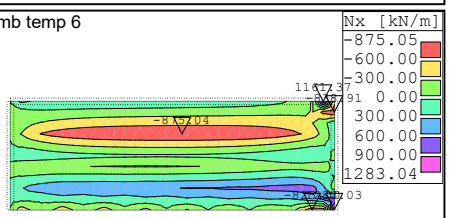
Ram: Ram 2
Uticaji u ploči: max Nx= 1361.61 / min Nx= -1203.64 kN/m

Opt. 15: komb temp 5



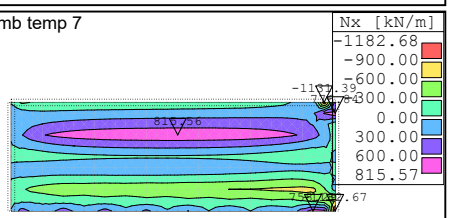
Ram: Ram 2
Uticaji u ploči: max Nx= 717.05 / min Nx= -1187.92 kN/m

Opt. 16: komb temp 6



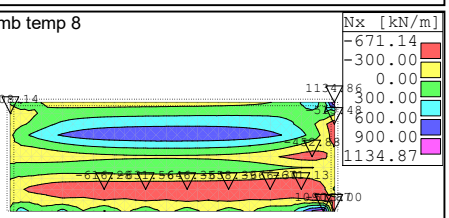
Ram: Ram 2
Uticaji u ploči: max Nx= 1283.03 / min Nx= -875.04 kN/m

Opt. 17: komb temp 7



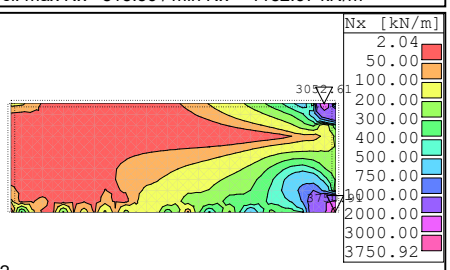
Ram: Ram 2
Uticaji u ploči: max Nx= 815.56 / min Nx= -1182.67 kN/m

Opt. 18: komb temp 8



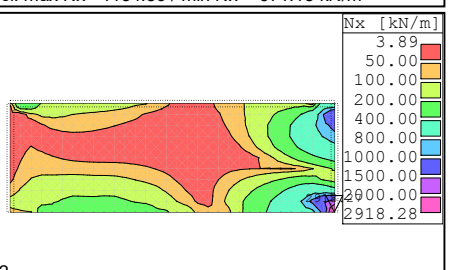
Ram: Ram 2
Uticaji u ploči: max Nx= 1134.86 / min Nx= -671.13 kN/m

Opt. 20: Sx



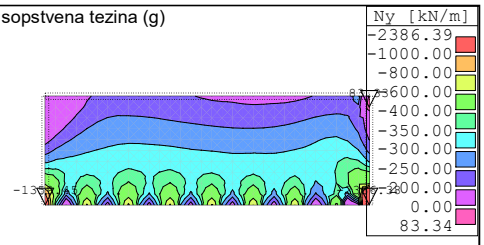
Ram: Ram 2
Uticaji u ploči: max Nx= 3750.91 / min Nx= 2.05 kN/m

Opt. 21: Sy



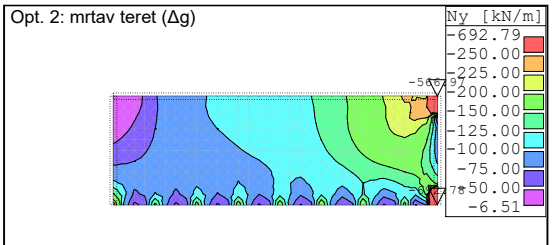
Ram: Ram 2
Uticaji u ploči: max Nx= 2918.27 / min Nx= 3.90 kN/m

Opt. 1: sopstvena tezina (g)



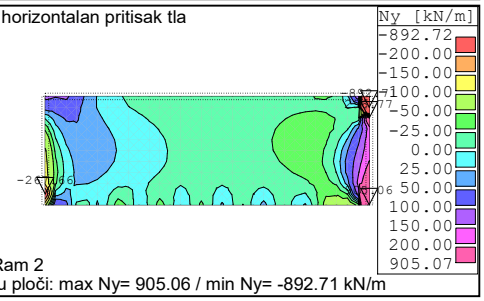
Ram: Ram 2
Uticaji u ploči: max Ny= 83.33 / min Ny= -2386.38 kN/m

Opt. 2: mrtav teret (Δg)



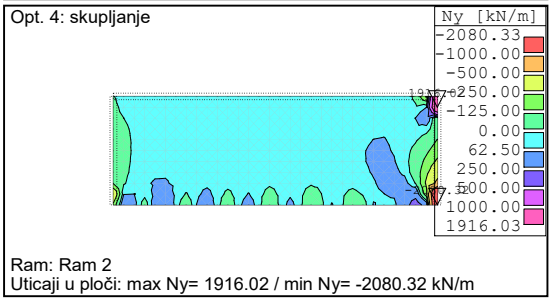
Ram: Ram 2
Uticaji u ploči: max Ny= -6.52 / min Ny= -692.78 kN/m

Opt. 3: horizontalan pritisak tla



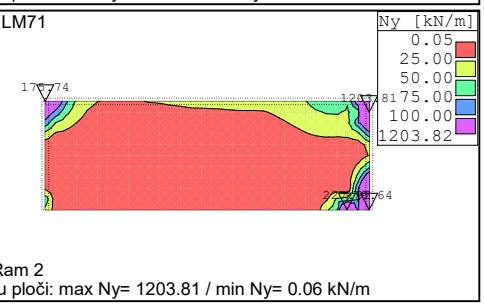
Ram: Ram 2
Uticaji u ploči: max Ny= 905.06 / min Ny= -892.71 kN/m

Opt. 4: skupljanje



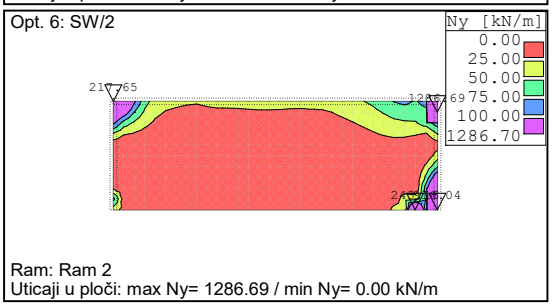
Ram: Ram 2
Uticaji u ploči: max Ny= 1916.02 / min Ny= -2080.32 kN/m

Opt. 5: LM71



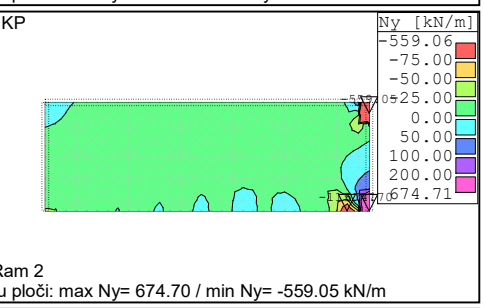
Ram: Ram 2
Uticaji u ploči: max Ny= 1203.81 / min Ny= 0.06 kN/m

Opt. 6: SW/2



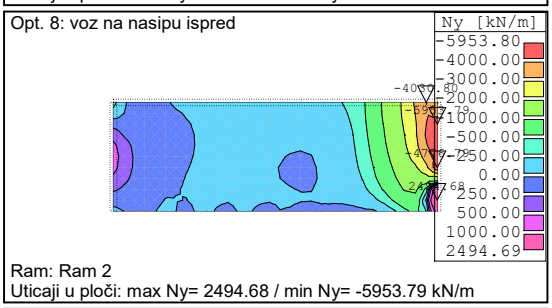
Ram: Ram 2
Uticaji u ploči: max Ny= 1286.69 / min Ny= 0.00 kN/m

Opt. 7: KP



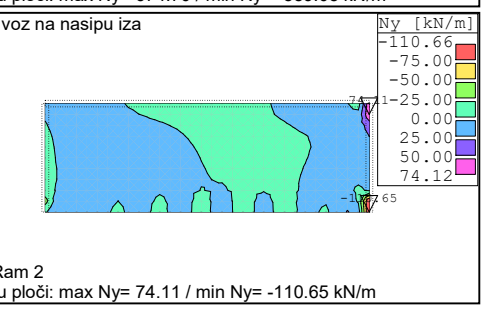
Ram: Ram 2
Uticaji u ploči: max Ny= 674.70 / min Ny= -559.05 kN/m

Opt. 8: voz na nasipu ispred



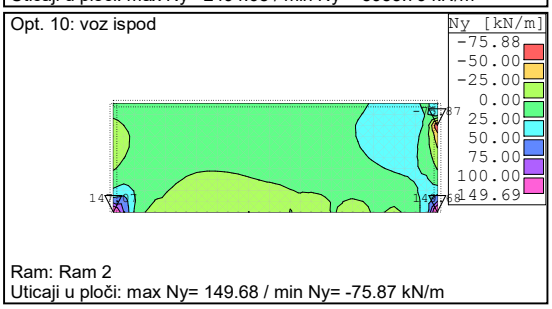
Ram: Ram 2
Uticaji u ploči: max Ny= 2494.68 / min Ny= -5953.79 kN/m

Opt. 9: voz na nasipu iza

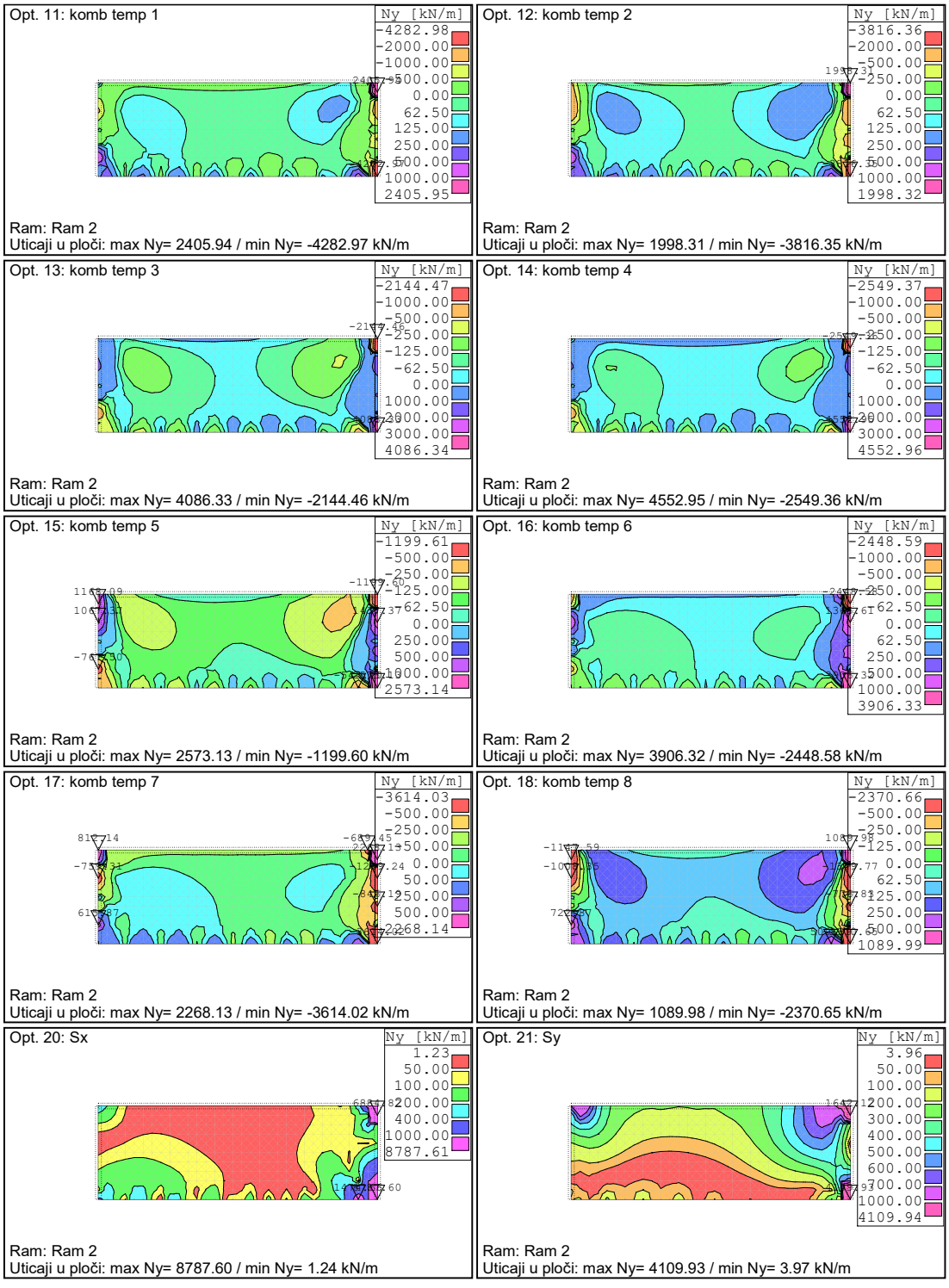


Ram: Ram 2
Uticaji u ploči: max Ny= 74.11 / min Ny= -110.65 kN/m

Opt. 10: voz ispod

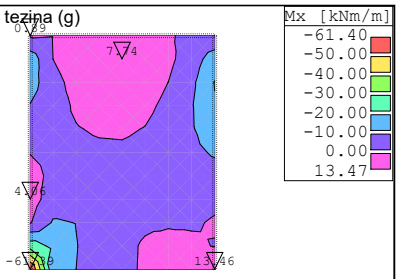


Ram: Ram 2
Uticaji u ploči: max Ny= 149.68 / min Ny= -75.87 kN/m



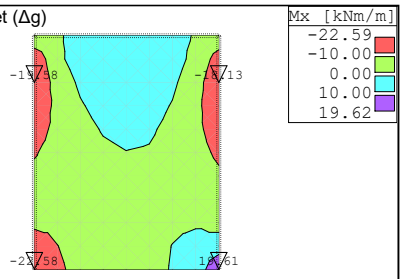
Утицаји у зиду у раму 2 су слични приказаним утицајима у зиду у раму 4.

Opt. 1: sopstvena tezina (g)



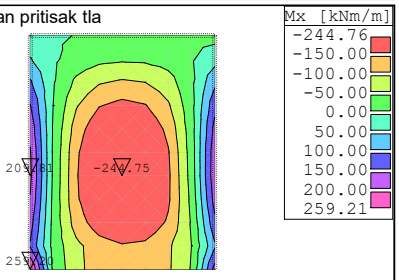
Ram: K_1
Uticaji u ploči: max Mx= 13.46 / min Mx= -61.39 kNm/m

Opt. 2: mrtav teret (Δg)



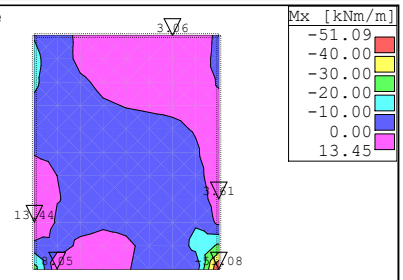
Ram: K_1
Uticaji u ploči: max Mx= 19.61 / min Mx= -22.58 kNm/m

Opt. 3: horizontalan pritisak tla



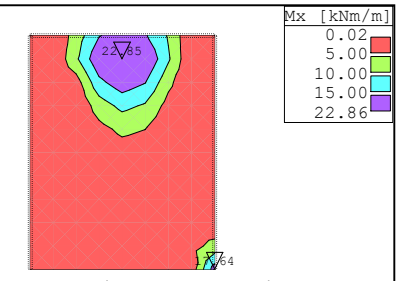
Ram: K_1
Uticaji u ploči: max Mx= 259.20 / min Mx= -244.75 kNm/m

Opt. 4: skupljanje



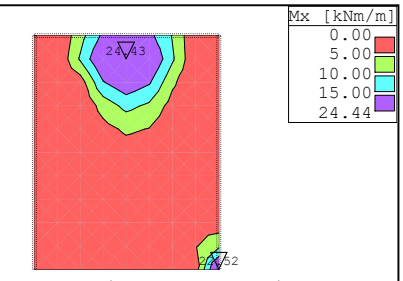
Ram: K_1
Uticaji u ploči: max Mx= 13.44 / min Mx= -51.08 kNm/m

Opt. 5: LM71



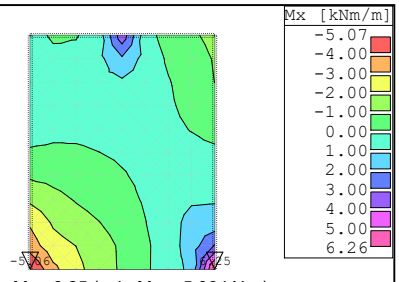
Ram: K_1
Uticaji u ploči: max Mx= 22.85 / min Mx= 0.03 kNm/m

Opt. 6: SW/2



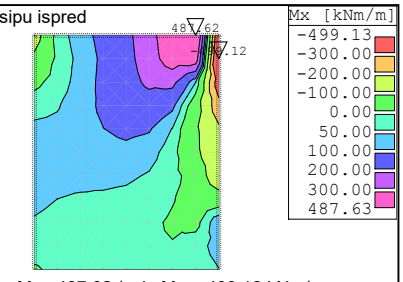
Ram: K_1
Uticaji u ploči: max Mx= 24.43 / min Mx= -0.00 kNm/m

Opt. 7: KP



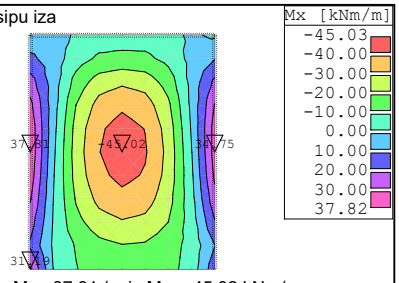
Ram: K_1
Uticaji u ploči: max Mx= 6.25 / min Mx= -5.06 kNm/m

Opt. 8: voz na nasipu ispred



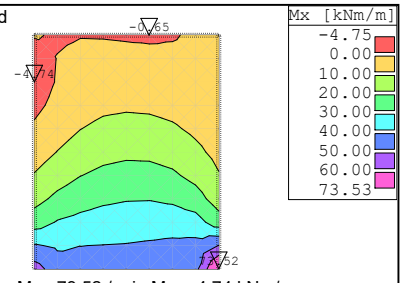
Ram: K_1
Uticaji u ploči: max Mx= 487.62 / min Mx= -499.12 kNm/m

Opt. 9: voz na nasipu iza



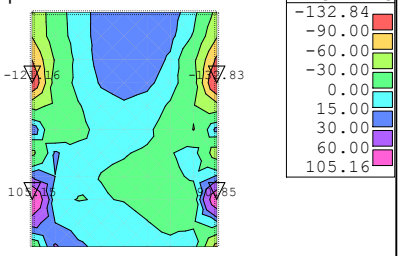
Ram: K_1
Uticaji u ploči: max Mx= 37.81 / min Mx= -45.02 kNm/m

Opt. 10: voz ispod



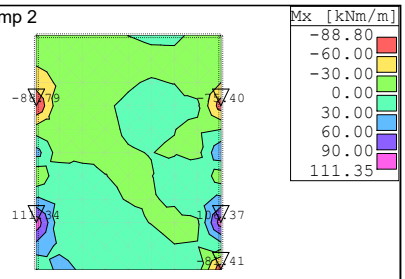
Ram: K_1
Uticaji u ploči: max Mx= 73.52 / min Mx= -4.74 kNm/m

Opt. 11: komb temp 1



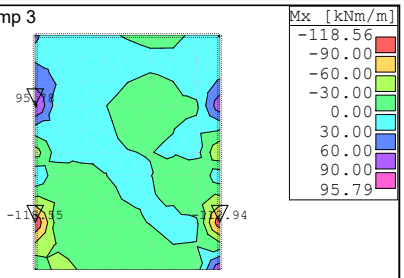
Ram: K_1
Uticaji u ploči: max Mx= 105.15 / min Mx= -132.83 kNm/m

Opt. 12: komb temp 2



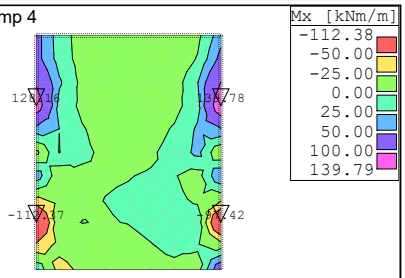
Ram: K_1
Uticaji u ploči: max Mx= 111.34 / min Mx= -88.79 kNm/m

Opt. 13: komb temp 3



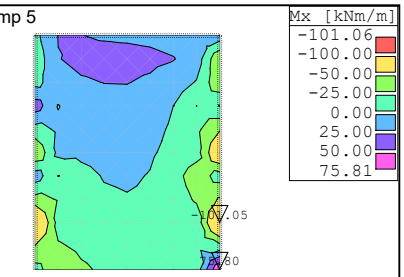
Ram: K_1
Uticaji u ploči: max Mx= 95.78 / min Mx= -118.55 kNm/m

Opt. 14: komb temp 4



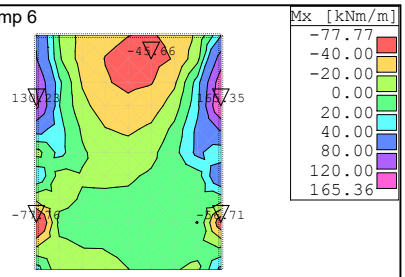
Ram: K_1
Uticaji u ploči: max Mx= 139.78 / min Mx= -112.37 kNm/m

Opt. 15: komb temp 5



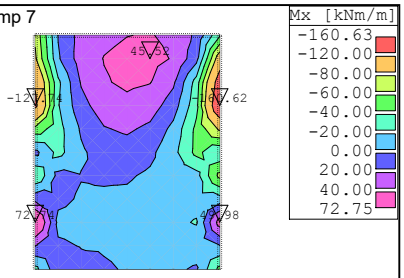
Ram: K_1
Uticaji u ploči: max Mx= 75.80 / min Mx= -101.05 kNm/m

Opt. 16: komb temp 6



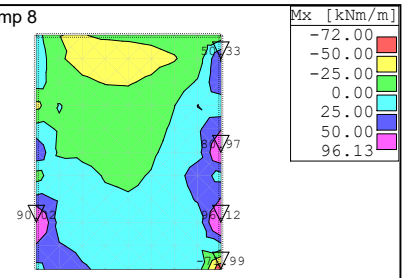
Ram: K_1
Uticaji u ploči: max Mx= 165.35 / min Mx= -77.76 kNm/m

Opt. 17: komb temp 7



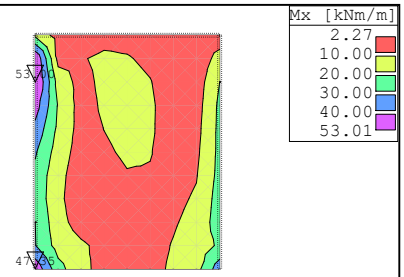
Ram: K_1
Uticaji u ploči: max Mx= 72.74 / min Mx= -160.62 kNm/m

Opt. 18: komb temp 8



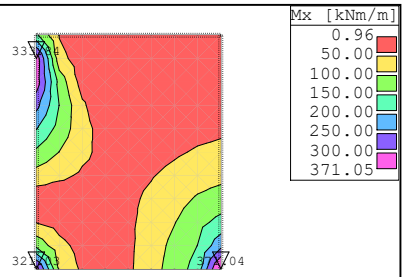
Ram: K_1
Uticaji u ploči: max Mx= 96.12 / min Mx= -71.99 kNm/m

Opt. 20: Sx



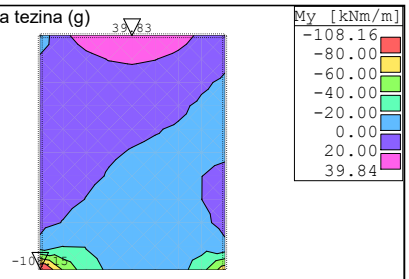
Ram: K_1
Uticaji u ploči: max Mx= 53.00 / min Mx= 2.28 kNm/m

Opt. 21: Sy



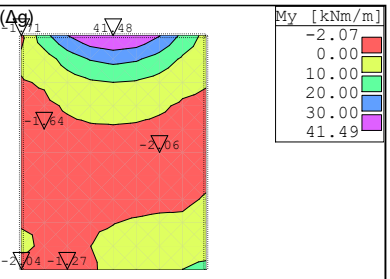
Ram: K_1
Uticaji u ploči: max Mx= 371.04 / min Mx= 0.97 kNm/m

Opt. 1: sopstvena tezina (g)



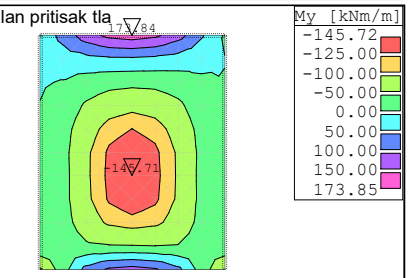
Ram: K_1
Uticaji u ploči: max My= 39.83 / min My= -108.15 kNm/m

Opt. 2: mrtav teret (Δg)



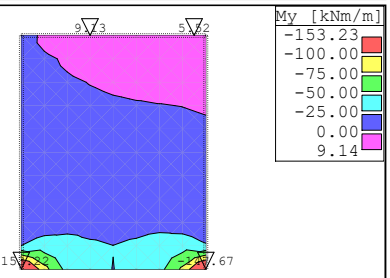
Ram: K_1
Uticaji u ploči: max My= 41.48 / min My= -2.06 kNm/m

Opt. 3: horizontalan pritisak tla



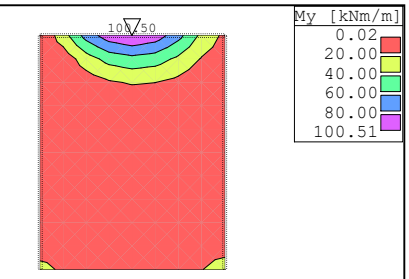
Ram: K_1
Uticaji u ploči: max My= 173.84 / min My= -145.71 kNm/m

Opt. 4: skupljanje



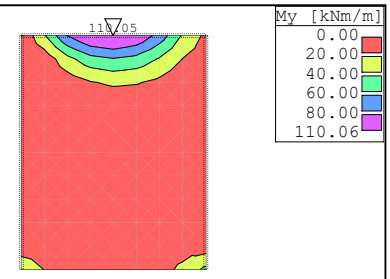
Ram: K_1
Uticaji u ploči: max My= 9.13 / min My= -153.22 kNm/m

Opt. 5: LM71



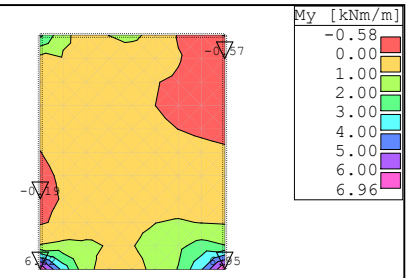
Ram: K_1
Uticaji u ploči: max My= 100.50 / min My= 0.03 kNm/m

Opt. 6: SW/2



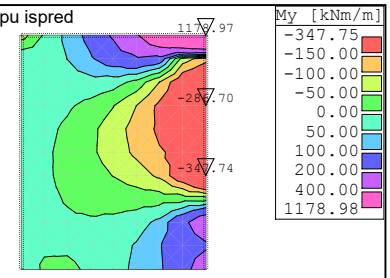
Ram: K_1
Uticaji u ploči: max My= 110.05 / min My= 0.01 kNm/m

Opt. 7: KP



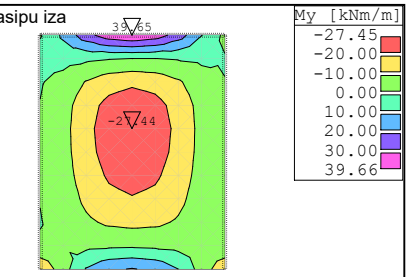
Ram: K_1
Uticaji u ploči: max My= 6.95 / min My= -0.57 kNm/m

Opt. 8: voz na nasipu ispred



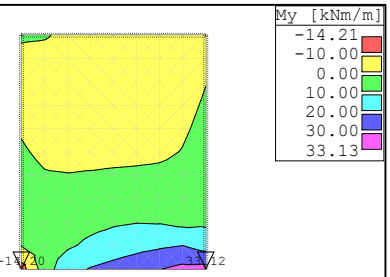
Ram: K_1
Uticaji u ploči: max My= 1178.97 / min My= -347.74 kNm/m

Opt. 9: voz na nasipu iza



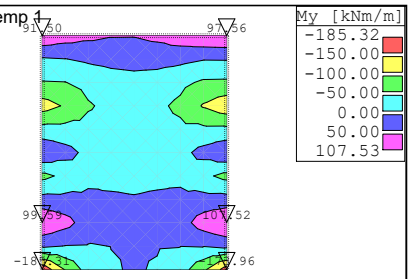
Ram: K_1
Uticaji u ploči: max My= 39.65 / min My= -27.44 kNm/m

Opt. 10: voz ispod



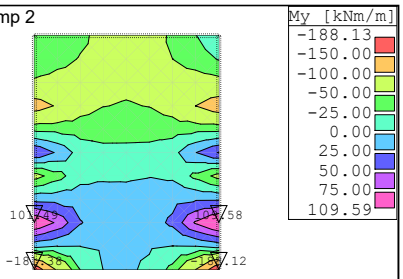
Ram: K_1
Uticaji u ploči: max My= 33.12 / min My= -14.20 kNm/m

Opt. 11: komb temp 1



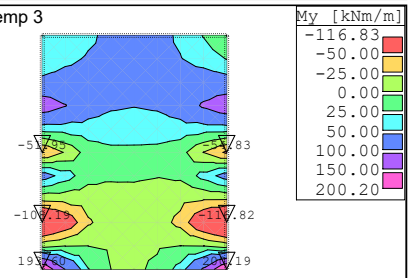
Ram: K_1
Uticaji u ploči: max My= 107.52 / min My= -185.31 kNm/m

Opt. 12: komb temp 2



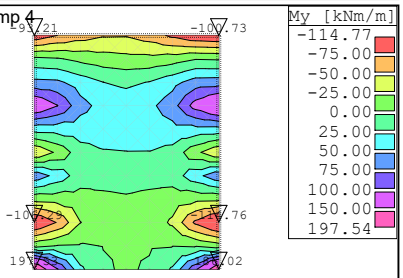
Ram: K_1
Uticaji u ploči: max My= 109.58 / min My= -188.12 kNm/m

Opt. 13: komb temp 3



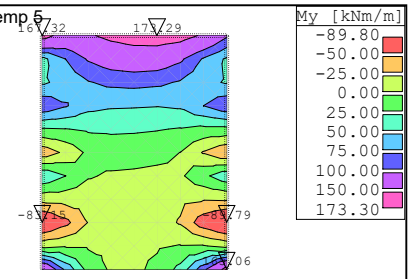
Ram: K_1
Uticaji u ploči: max My= 200.19 / min My= -116.82 kNm/m

Opt. 14: komb temp 4



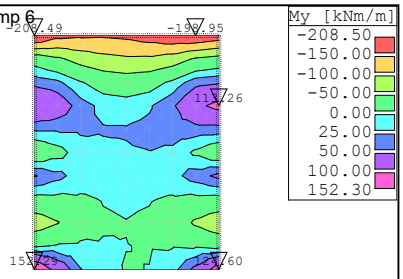
Ram: K_1
Uticaji u ploči: max My= 197.53 / min My= -114.76 kNm/m

Opt. 15: komb temp 5



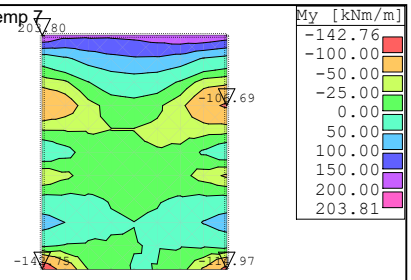
Ram: K_1
Uticaji u ploči: max My= 173.29 / min My= -89.79 kNm/m

Opt. 16: komb temp 6



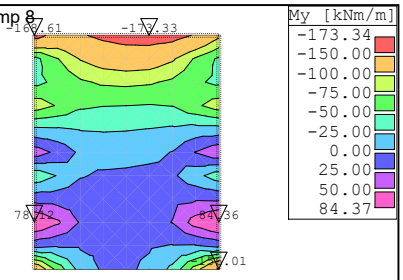
Ram: K_1
Uticaji u ploči: max My= 152.29 / min My= -208.49 kNm/m

Opt. 17: komb temp 7



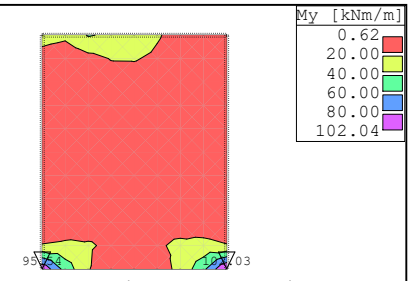
Ram: K_1
Uticaji u ploči: max My= 203.80 / min My= -142.75 kNm/m

Opt. 18: komb temp 8



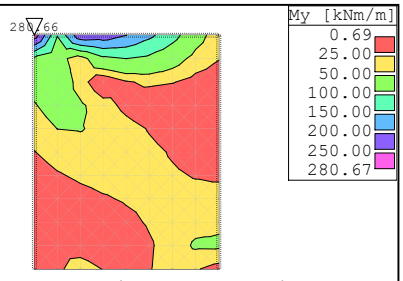
Ram: K_1
Uticaji u ploči: max My= 84.36 / min My= -173.33 kNm/m

Opt. 20: Sx



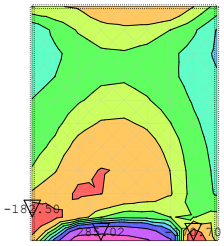
Ram: K_1
Uticaji u ploči: max My= 102.03 / min My= 0.63 kNm/m

Opt. 21: Sy



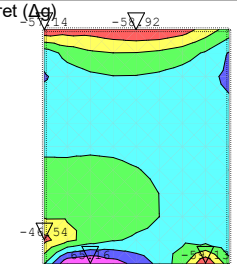
Ram: K_1
Uticaji u ploči: max My= 280.66 / min My= 0.70 kNm/m

Opt. 1: sopstvena tezina (g)



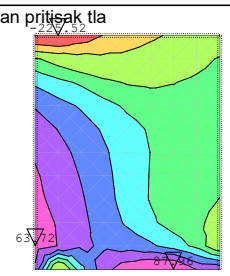
Ram: K_1
Uticaji u ploči: max Nx= 285.02 / min Nx= -182.50 kN/m

Opt. 2: mrtav teret (Δg)



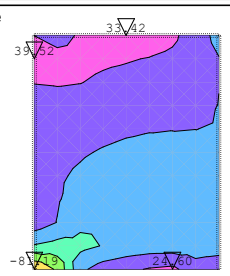
Ram: K_1
Uticaji u ploči: max Nx= 65.16 / min Nx= -59.13 kN/m

Opt. 3: horizontalan pritisak tla



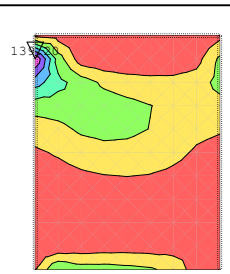
Ram: K_1
Uticaji u ploči: max Nx= 87.96 / min Nx= -225.52 kN/m

Opt. 4: skupljanje



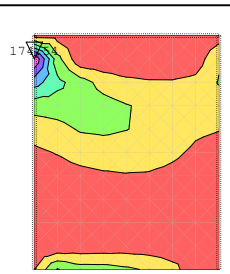
Ram: K_1
Uticaji u ploči: max Nx= 39.52 / min Nx= -81.19 kN/m

Opt. 5: LM71



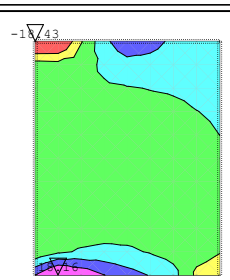
Ram: K_1
Uticaji u ploči: max Nx= 139.20 / min Nx= 0.82 kN/m

Opt. 6: SW/2



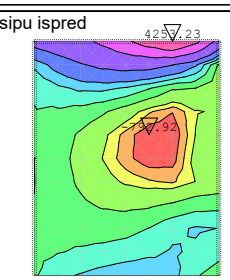
Ram: K_1
Uticaji u ploči: max Nx= 174.54 / min Nx= 1.05 kN/m

Opt. 7: KP



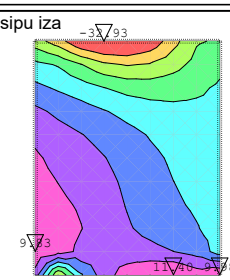
Ram: K_1
Uticaji u ploči: max Nx= 18.16 / min Nx= -18.43 kN/m

Opt. 8: voz na nasipu ispred



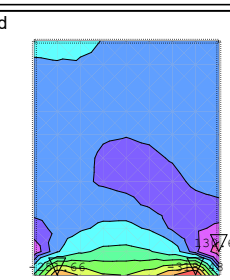
Ram: K_1
Uticaji u ploči: max Nx= 4253.23 / min Nx= -792.92 kN/m

Opt. 9: voz na nasipu iza



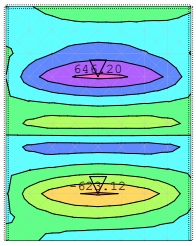
Ram: K_1
Uticaji u ploči: max Nx= 11.40 / min Nx= -32.93 kN/m

Opt. 10: voz ispod



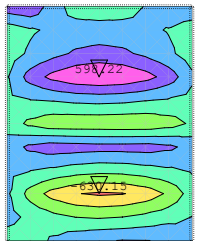
Ram: K_1
Uticaji u ploči: max Nx= 130.65 / min Nx= -318.48 kN/m

Opt. 11: komb temp 1



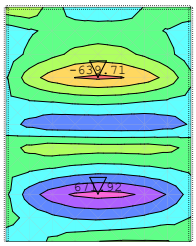
Ram: K_1
Uticaji u ploči: max Nx= 646.20 / min Nx= -623.12 kN/m

Opt. 12: komb temp 2



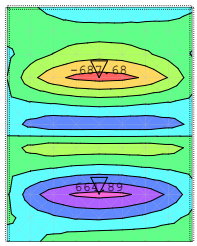
Ram: K_1
Uticaji u ploči: max Nx= 598.22 / min Nx= -630.15 kN/m

Opt. 13: komb temp 3



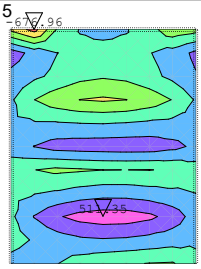
Ram: K_1
Uticaji u ploči: max Nx= 671.92 / min Nx= -639.71 kN/m

Opt. 14: komb temp 4



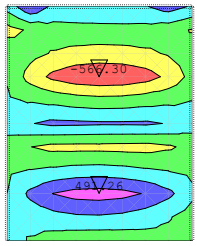
Ram: K_1
Uticaji u ploči: max Nx= 664.89 / min Nx= -687.68 kN/m

Opt. 15: komb temp 5



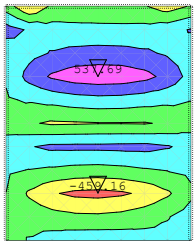
Ram: K_1
Uticaji u ploči: max Nx= 511.35 / min Nx= -676.96 kN/m

Opt. 16: komb temp 6



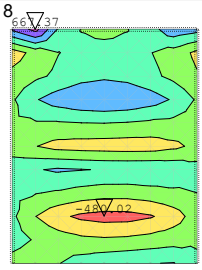
Ram: K_1
Uticaji u ploči: max Nx= 491.26 / min Nx= -566.30 kN/m

Opt. 17: komb temp 7



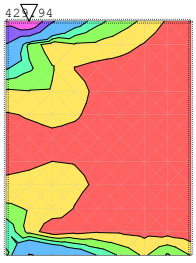
Ram: K_1
Uticaji u ploči: max Nx= 537.69 / min Nx= -459.16 kN/m

Opt. 18: komb temp 8



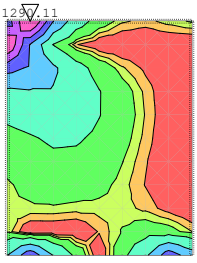
Ram: K_1
Uticaji u ploči: max Nx= 667.37 / min Nx= -480.02 kN/m

Opt. 20: Sx



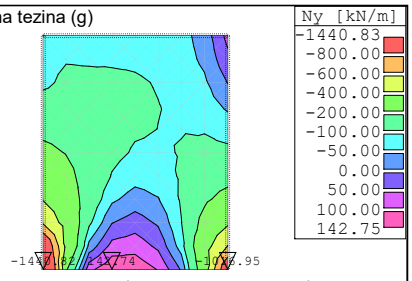
Ram: K_1
Uticaji u ploči: max Nx= 429.94 / min Nx= 3.43 kN/m

Opt. 21: Sy



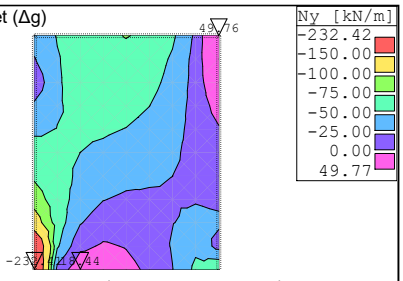
Ram: K_1
Uticaji u ploči: max Nx= 1290.11 / min Nx= 3.97 kN/m

Opt. 1: sopstvena tezina (g)



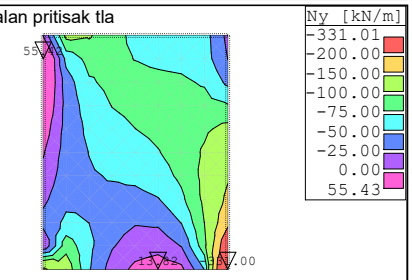
Ram: K_1
Uticaji u ploči: max Ny= 142.74 / min Ny= -1440.82 kN/m

Opt. 2: mrtav teret (Δg)



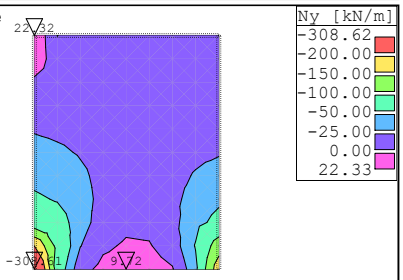
Ram: K_1
Uticaji u ploči: max Ny= 49.76 / min Ny= -232.41 kN/m

Opt. 3: horizontalan pritisak tla



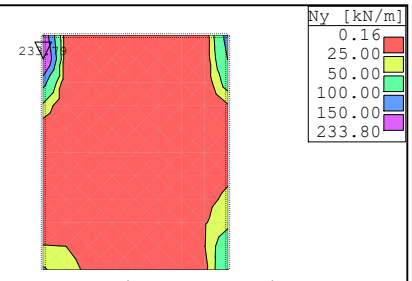
Ram: K_1
Uticaji u ploči: max Ny= 55.42 / min Ny= -331.00 kN/m

Opt. 4: skupljanje



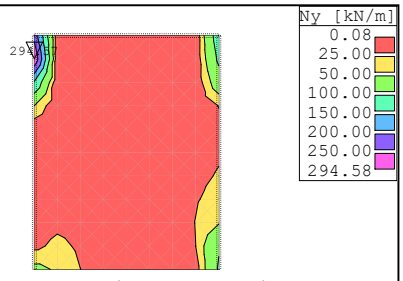
Ram: K_1
Uticaji u ploči: max Ny= 22.32 / min Ny= -308.61 kN/m

Opt. 5: LM71



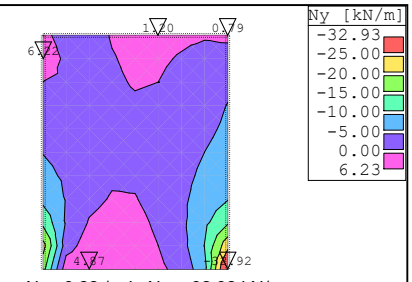
Ram: K_1
Uticaji u ploči: max Ny= 233.79 / min Ny= 0.17 kN/m

Opt. 6: SW/2



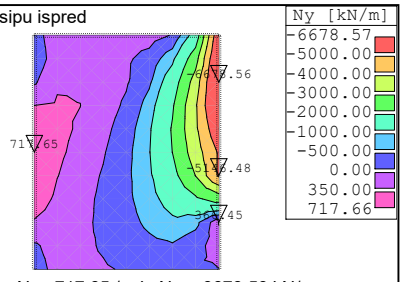
Ram: K_1
Uticaji u ploči: max Ny= 294.57 / min Ny= 0.09 kN/m

Opt. 7: KP



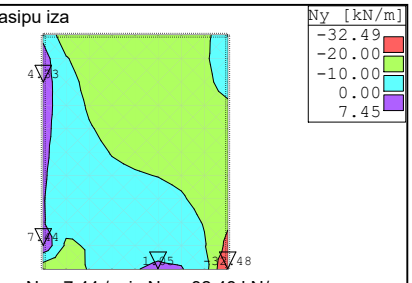
Ram: K_1
Uticaji u ploči: max Ny= 6.22 / min Ny= -32.92 kN/m

Opt. 8: voz na nasipu ispred



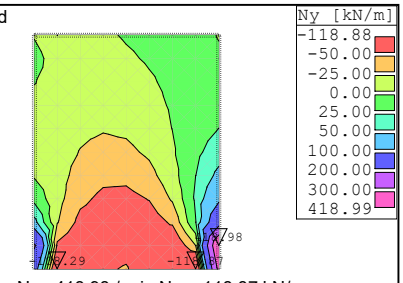
Ram: K_1
Uticaji u ploči: max Ny= 717.65 / min Ny= -6678.56 kN/m

Opt. 9: voz na nasipu iza

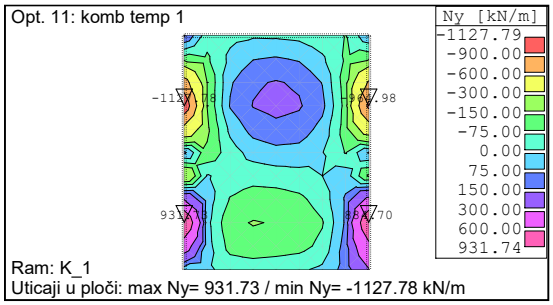


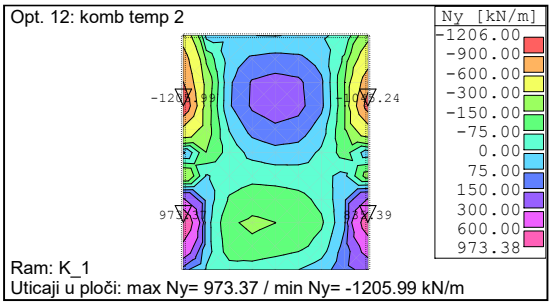
Ram: K_1
Uticaji u ploči: max Ny= 7.44 / min Ny= -32.48 kN/m

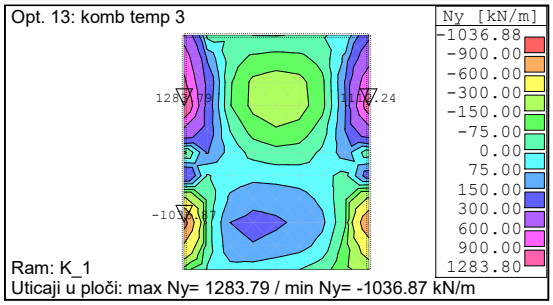
Opt. 10: voz ispod

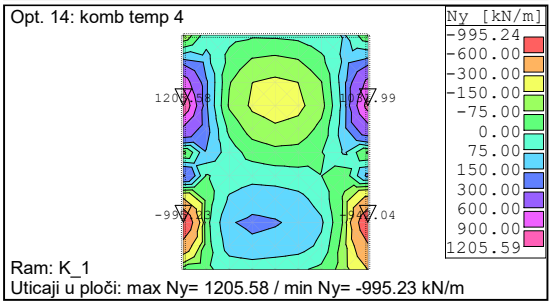


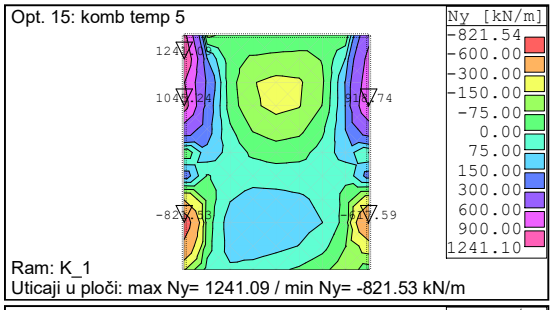
Ram: K_1
Uticaji u ploči: max Ny= 418.98 / min Ny= -118.87 kN/m

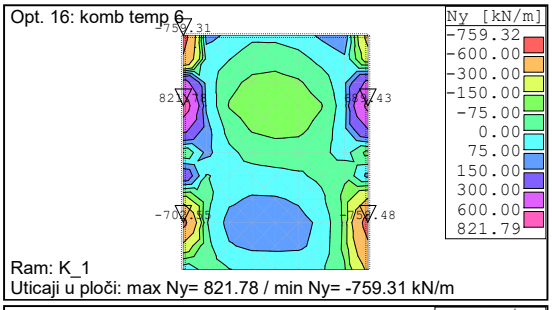


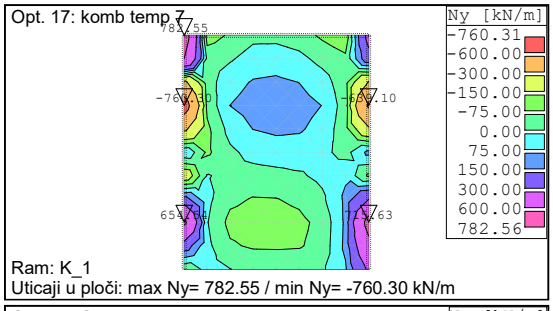


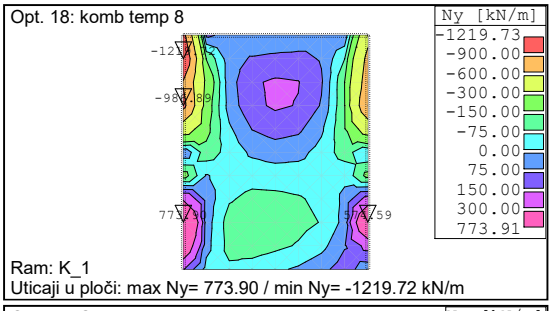


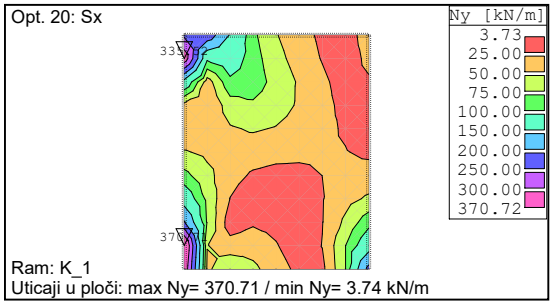


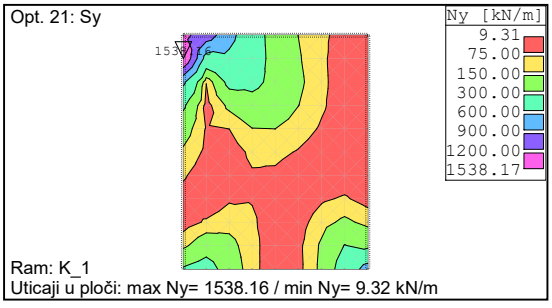








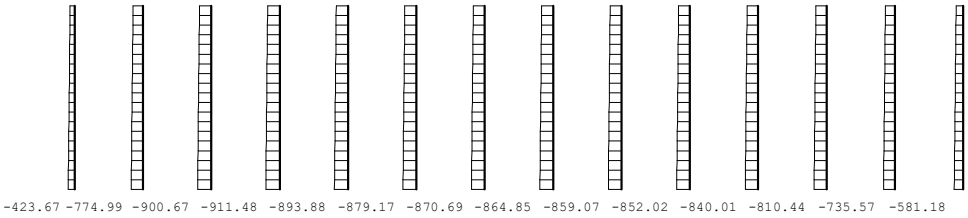




Утицаји у зиду у раму К2 су слични приказаним утицајима у зиду у раму К1.

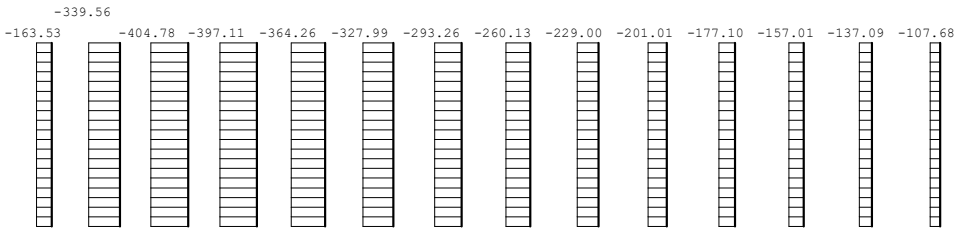
5.5.4 Стубови

Opt. 1: sopstvena tezina (g)



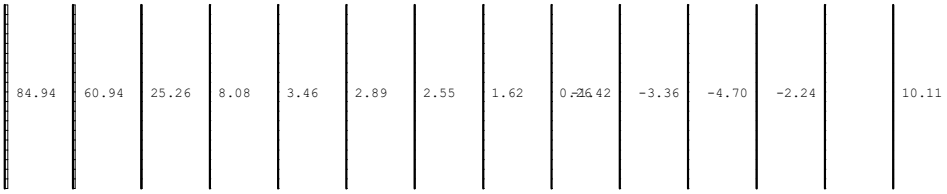
Ram: Ram 2
Uticaji u gredi: max N1= 300.95 / min N1= -2440.36 kN

Opt. 2: mrtav teret (Δg)



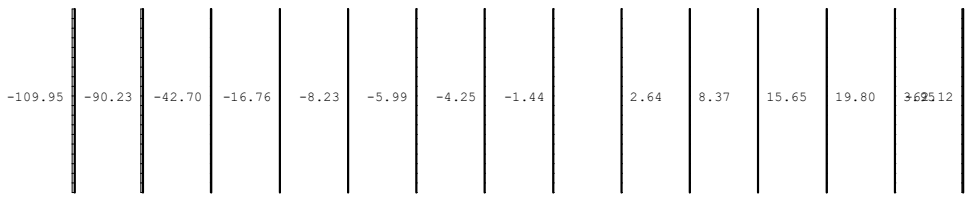
Ram: Ram 2
Uticaji u gredi: max N1= 190.78 / min N1= -404.78 kN

Opt. 3: horizontalan pritisak tla



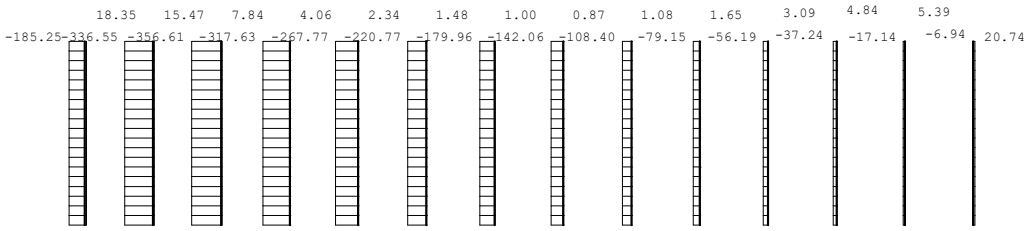
Ram: Ram 2
Uticaji u gredi: max N1= 84.94 / min N1= -1075.10 kN

Opt. 4: skupljanje



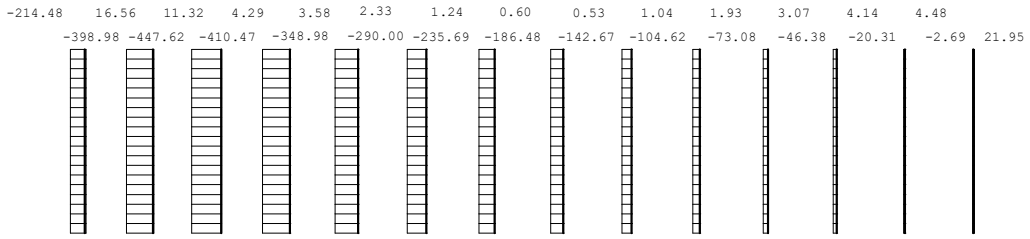
Ram: Ram 2
Uticaji u gredi: max N1= 1574.71 / min N1= -167.02 kN

Opt. 5: LM71



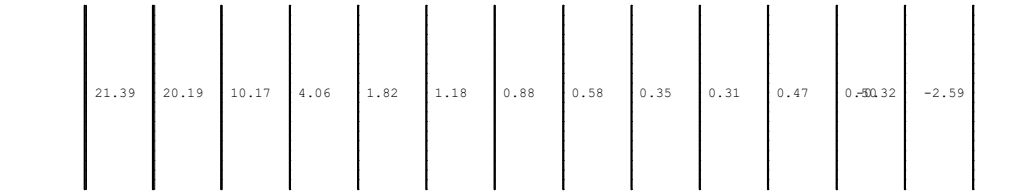
Ram: Ram 2
Uticaji u gredi: max N1= 445.68 / min N1= -374.93 kN

Opt. 6: SW/2



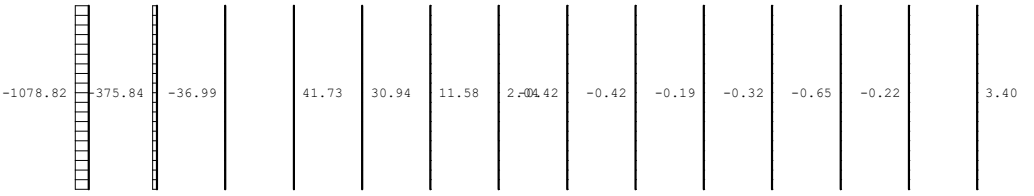
Ram: Ram 2
Uticaji u gredi: max N1= 563.84 / min N1= -447.62 kN

Opt. 7: KP



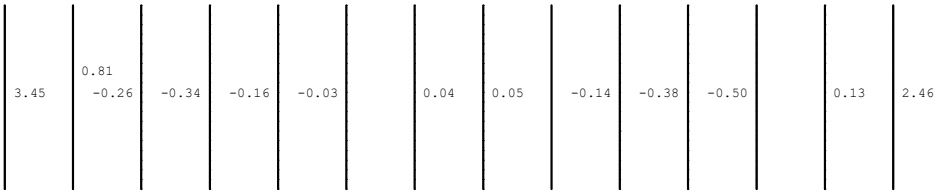
Ram: Ram 2
Uticaji u gredi: max N1= 451.68 / min N1= -192.40 kN

Opt. 8: voz na nasipu ispred



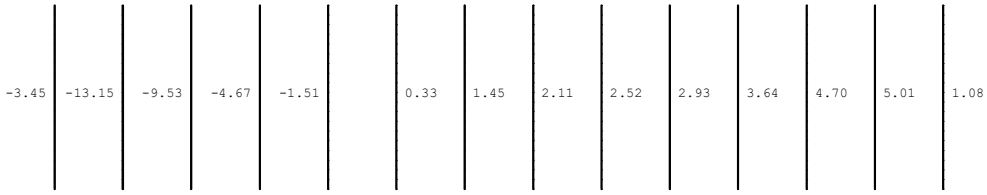
Ram: Ram 2
Uticaji u gredi: max N1= 3032.03 / min N1= -1078.82 kN

Opt. 9: voz na nasipu iza



Ram: Ram 2
Uticaji u gredi: max N1= 10.14 / min N1= -238.32 kN

Opt. 10: voz ispod

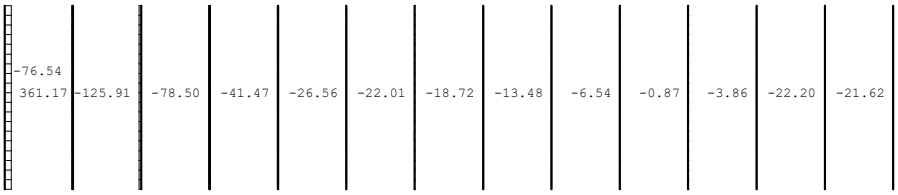


Ram: Ram 2
Uticaji u gredi: max N1= 534.54 / min N1= -141.41 kN

Opt. 11: komb temp 1

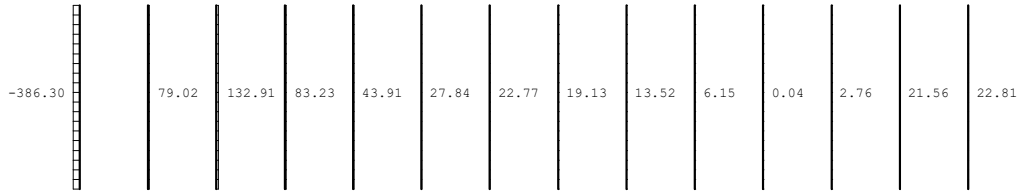
Ram: Ram 2
Uticaji u gredi: max N1= 2124.44 / min N1= -433.65 kN

Opt. 12: komb temp 2



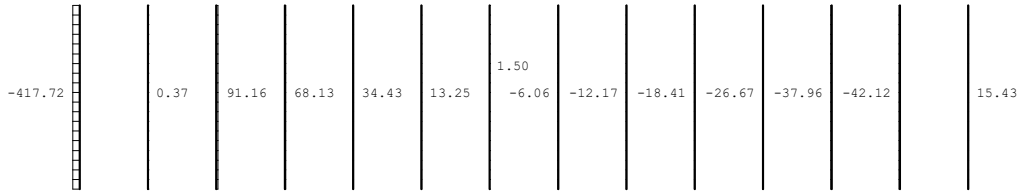
Ram: Ram 2
Uticaji u gredi: max N1= 2145.61 / min N1= -451.43 kN

Opt. 13: komb temp 3



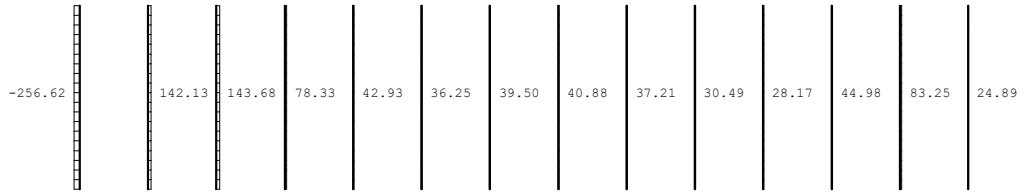
Ram: Ram 2
Uticaji u gredi: max N1= 480.93 / min N1= -2287.95 kN

Opt. 14: komb temp 4



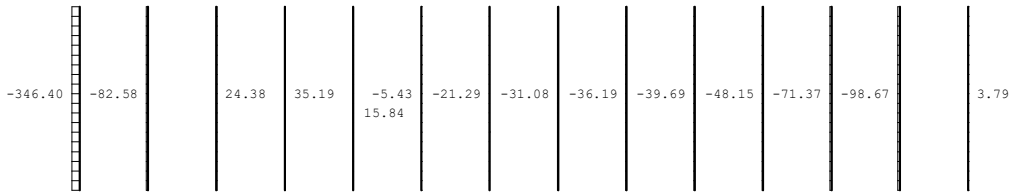
Ram: Ram 2
Uticaji u gredi: max N1= 463.16 / min N1= -2266.78 kN

Opt. 15: komb temp 5



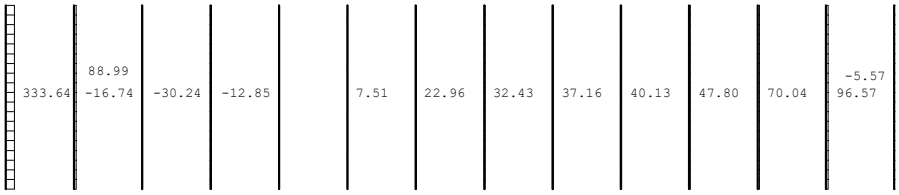
Ram: Ram 2
Uticaji u gredi: max N1= 379.43 / min N1= -1738.27 kN

Opt. 16: komb temp 6



Ram: Ram 2
Uticaji u gredi: max N1= 328.64 / min N1= -1677.77 kN

Opt. 17: komb temp 7

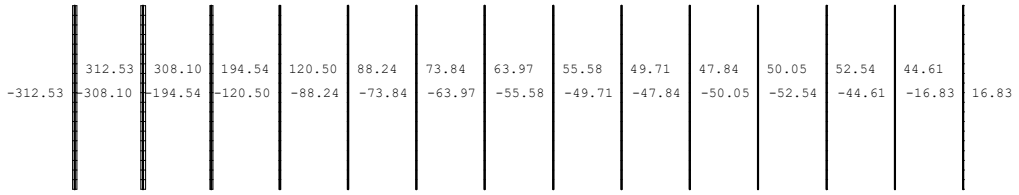


Ram: Ram 2
Uticaji u gredi: max N1= 1465.84 / min N1= -279.34 kN

Opt. 18: komb temp 8

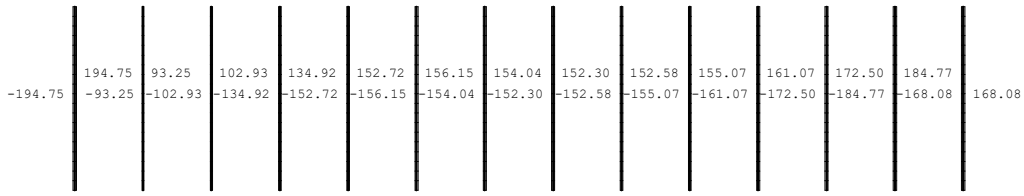
Ram: Ram 2
Uticaji u gredi: max N1= 1631.52 / min N1= -357.30 kN

Opt. 20: Sx



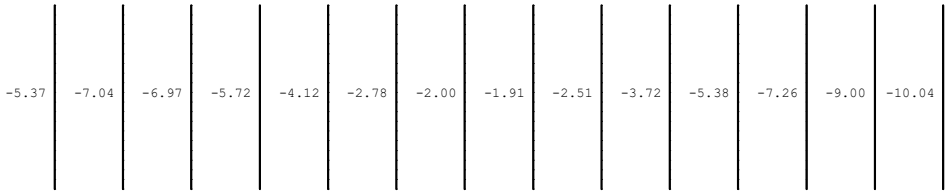
Ram: Ram 2
Uticaji u gredi: max N1= 5009.09 / min N1= -5009.09 kN

Opt. 21: Sy



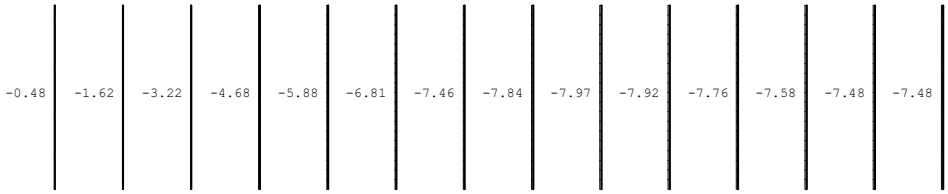
Ram: Ram 2
Uticaji u gredi: max N1= 3949.80 / min N1= -3949.80 kN

Opt. 1: sopstvena tezina (g)



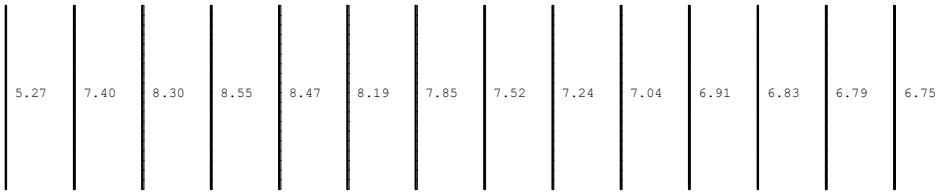
Ram: Ram 2
Uticaji u gredi: max T2= 1534.42 / min T2= -459.68 kN

Opt. 2: mrtav teret (Δg)



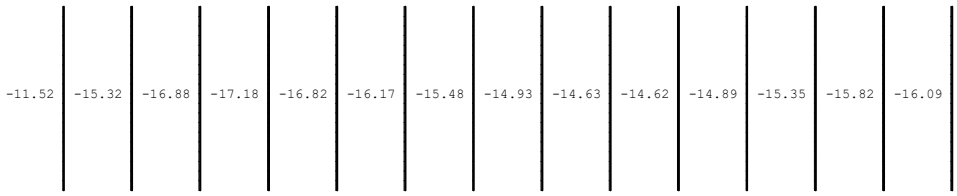
Ram: Ram 2
Uticaji u gredi: max T2= 174.23 / min T2= -98.01 kN

Opt. 3: horizontalan pritisak tla



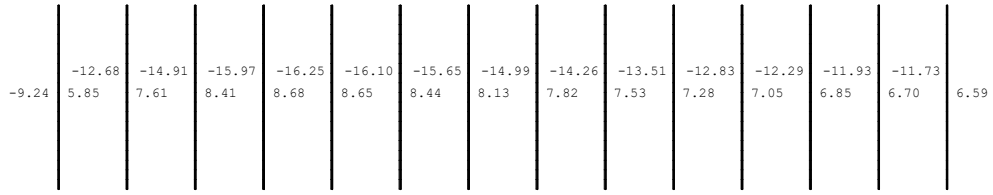
Ram: Ram 2
Uticaji u gredi: max T2= 200.01 / min T2= -94.08 kN

Opt. 4: skupljanje



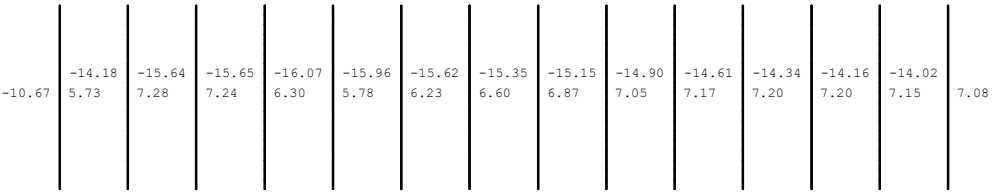
Ram: Ram 2
Uticaji u gredi: max T2= 475.74 / min T2= -380.65 kN

Opt. 5: LM71



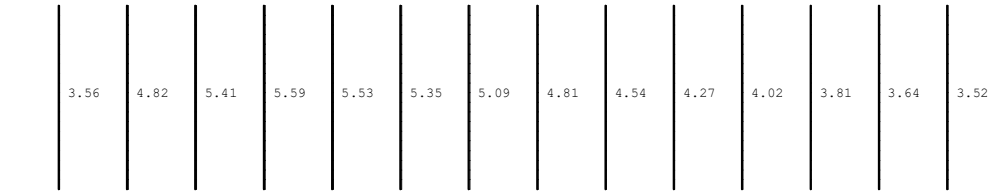
Ram: Ram 2
Uticaji u gredi: max T2= 505.64 / min T2= -336.40 kN

Opt. 6: SW/2



Ram: Ram 2
Uticaji u gredi: max T2= 632.76 / min T2= -429.52 kN

Opt. 7: KP

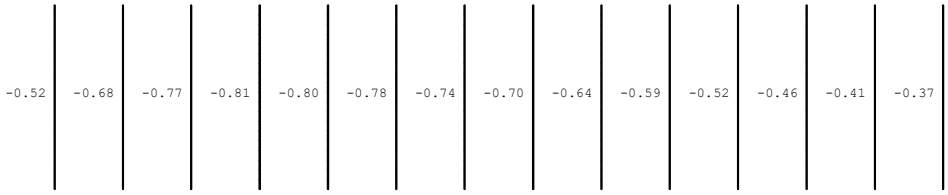


Ram: Ram 2
Uticaji u gredi: max T2= 123.39 / min T2= -167.62 kN

Opt. 8: voz na nasipu ispred

Ram: Ram 2
Uticaji u gredi: max T2= 1288.72 / min T2= -1476.22 kN

Opt. 9: voz na nasipu iza



Ram: Ram 2
Uticaji u gredi: max T2= 46.37 / min T2= -19.29 kN

Opt. 10: voz ispod

Ram: Ram 2
Uticaji u gredi: max T2= 70.18 / min T2= -51.17 kN

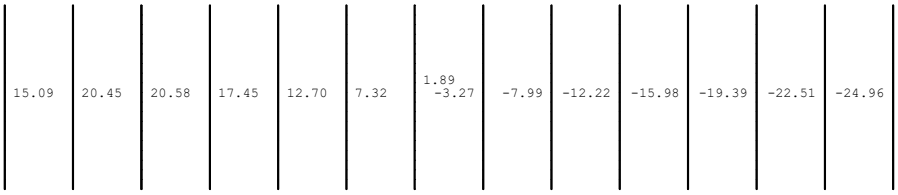
Opt. 11: komb temp 1

Ram: Ram 2
Uticaji u gredi: max T2= 1713.94 / min T2= -509.53 kN

Opt. 12: komb temp 2

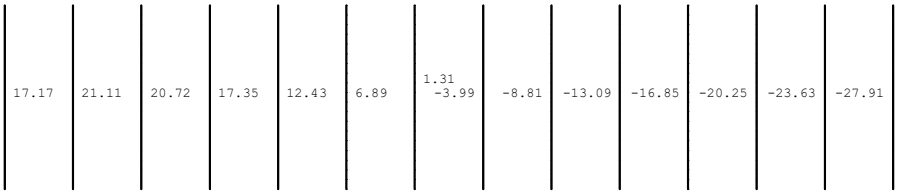
Ram: Ram 2
Uticaji u gredi: max T2= 1553.03 / min T2= -539.36 kN

Opt. 13: komb temp 3



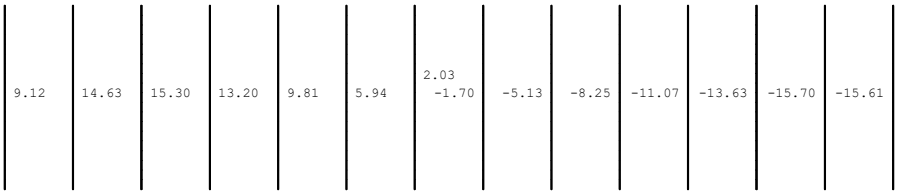
Ram: Ram 2
Uticaji u gredi: max T2= 574.32 / min T2= -1661.93 kN

Opt. 14: komb temp 4



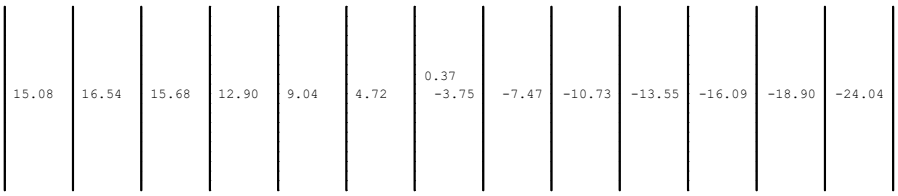
Ram: Ram 2
Uticaji u gredi: max T2= 544.50 / min T2= -1822.84 kN

Opt. 15: komb temp 5



Ram: Ram 2
Uticaji u gredi: max T2= 493.51 / min T2= -1076.92 kN

Opt. 16: komb temp 6



Ram: Ram 2
Uticaji u gredi: max T2= 380.53 / min T2= -1536.66 kN

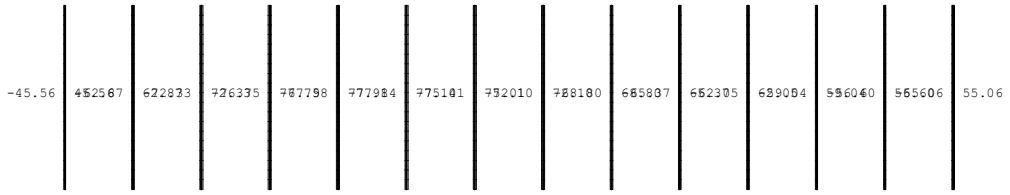
Opt. 17: komb temp 7

Ram: Ram 2
Uticaji u gredi: max T2= 1440.23 / min T2= -353.70 kN

Opt. 18: komb temp 8

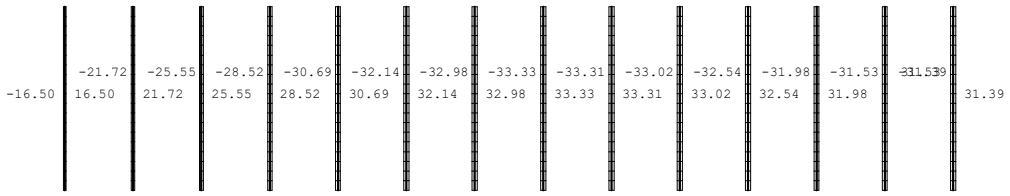
Ram: Ram 2
Uticaji u gredi: max T2= 995.24 / min T2= -470.16 kN

Opt. 20: Sx



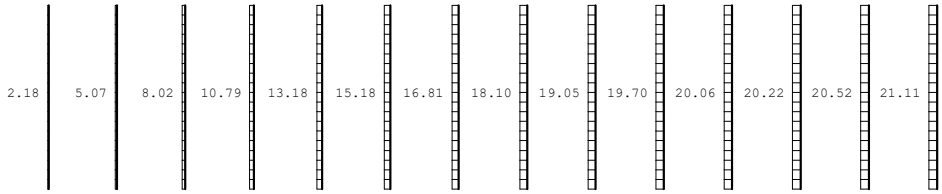
Ram: Ram 2
Uticaji u gredi: max T2= 1886.93 / min T2= -1886.93 kN

Opt. 21: Sy



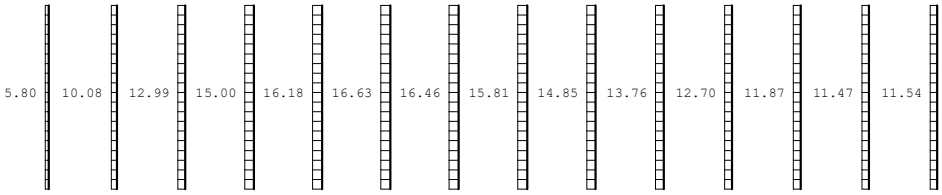
Ram: Ram 2
Uticaji u gredi: max T2= 482.16 / min T2= -482.16 kN

Opt. 1: sopstvena tezina (g)



Ram: Ram 2
Uticaji u gredi: max T3= 94.85 / min T3= -70.67 kN

Opt. 2: mrtav teret (Δg)

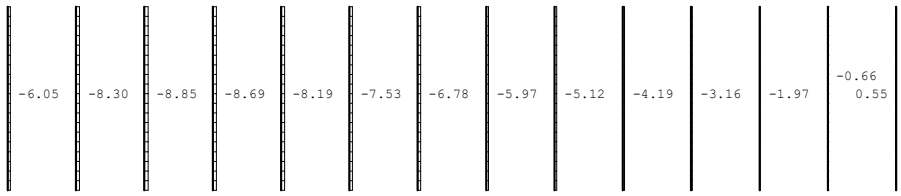


Ram: Ram 2
Uticaji u gredi: max T3= 63.30 / min T3= -48.47 kN

Opt. 3: horizontalan pritisak tla

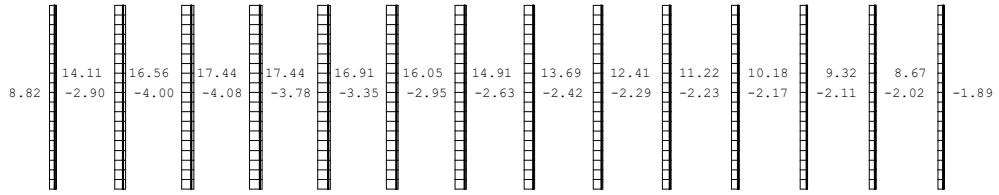
Ram: Ram 2
Uticaji u gredi: max T3= 57.63 / min T3= -81.93 kN

Opt. 4: skupljanje



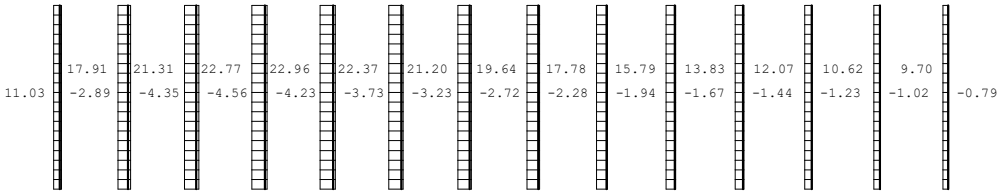
Ram: Ram 2
Uticaji u gredi: max T3= 88.38 / min T3= -54.46 kN

Opt. 5: LM71



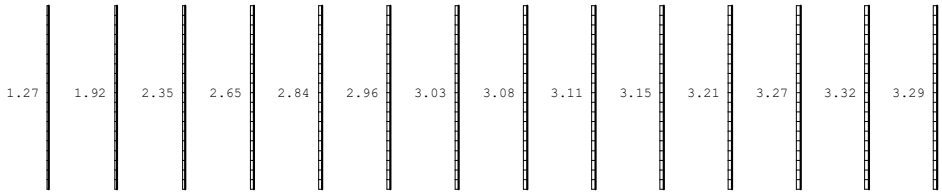
Ram: Ram 2
Uticaji u gredi: max T3= 62.33 / min T3= -42.30 kN

Opt. 6: SW/2



Ram: Ram 2
Uticaji u gredi: max T3= 66.91 / min T3= -50.28 kN

Opt. 7: KP

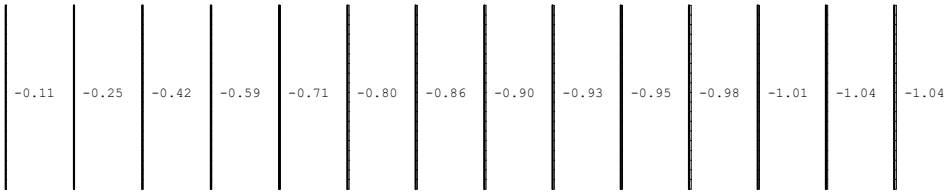


Ram: Ram 2
Uticaji u gredi: max T3= 29.92 / min T3= -21.50 kN

Opt. 8: voz na nasipu ispred

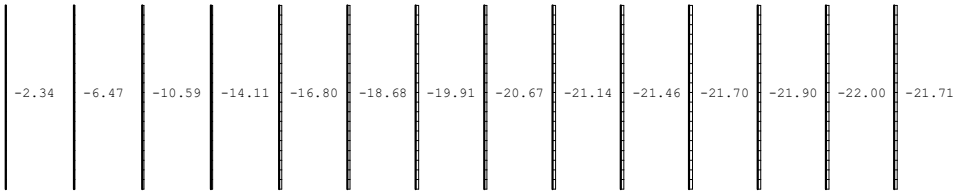
Ram: Ram 2
Uticaji u gredi: max T3= 673.40 / min T3= -96.99 kN

Opt. 9: voz na nasipu iza



Ram: Ram 2
Uticaji u gredi: max T3= 11.83 / min T3= -19.92 kN

Opt. 10: voz ispod

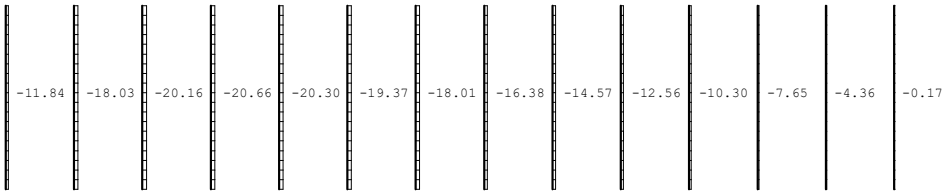


Ram: Ram 2
Uticaji u gredi: max T3= 234.72 / min T3= -259.23 kN

Opt. 11: komb temp 1

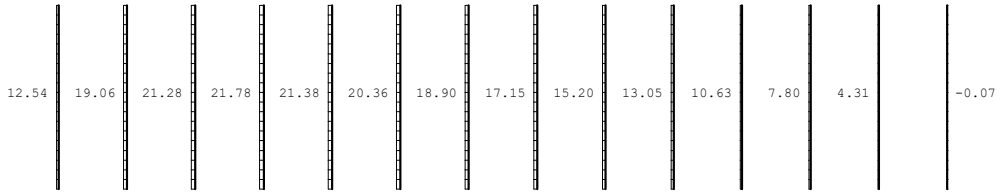
Ram: Ram 2
Uticaji u gredi: max T3= 182.48 / min T3= -134.76 kN

Opt. 12: komb temp 2



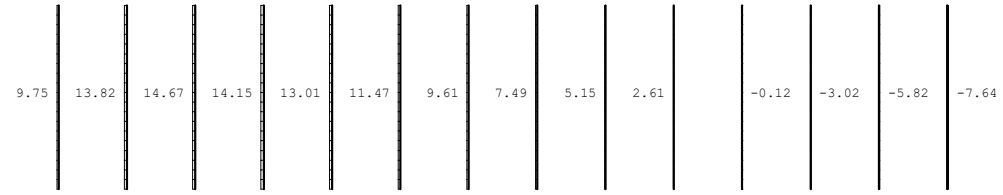
Ram: Ram 2
Uticaji u gredi: max T3= 185.20 / min T3= -139.75 kN

Opt. 13: komb temp 3



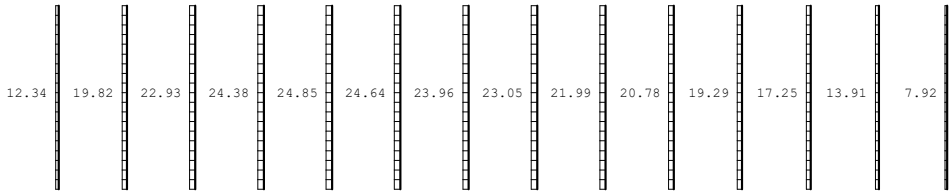
Ram: Ram 2
Uticaji u gredi: max T3= 148.90 / min T3= -197.45 kN

Opt. 14: komb temp 4



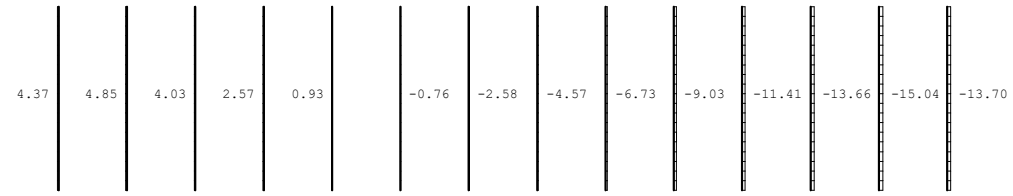
Ram: Ram 2
Uticaji u gredi: max T3= 143.91 / min T3= -194.74 kN

Opt. 15: komb temp 5



Ram: Ram 2
Uticaji u gredi: max T3= 131.55 / min T3= -150.95 kN

Opt. 16: komb temp 6

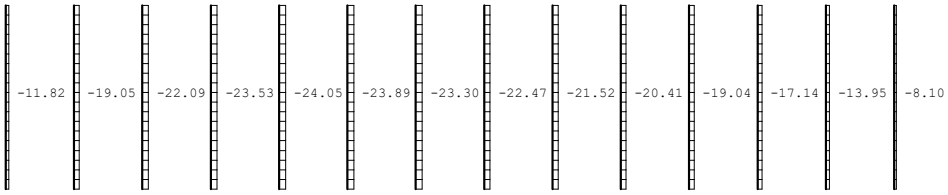


Ram: Ram 2
Uticaji u gredi: max T3= 102.68 / min T3= -143.19 kN

Opt. 17: komb temp 7

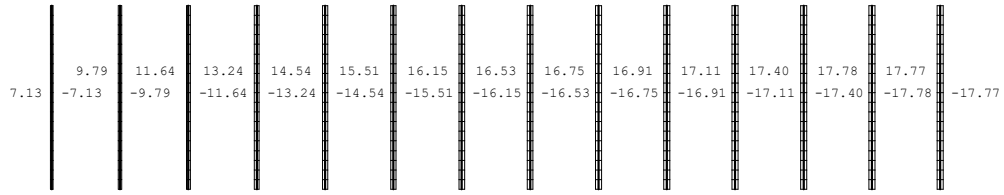
Ram: Ram 2
Uticaji u gredi: max T3= 131.51 / min T3= -102.30 kN

Opt. 18: komb temp 8



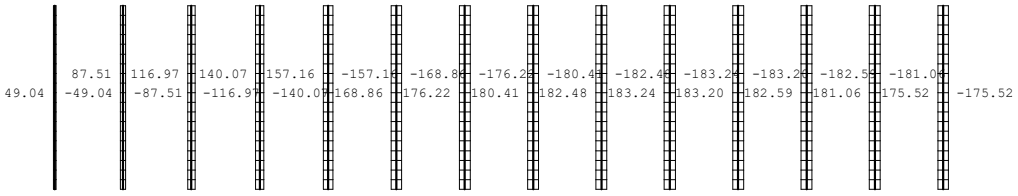
Ram: Ram 2
Uticaji u gredi: max T3= 141.76 / min T3= -128.75 kN

Opt. 20: Sx



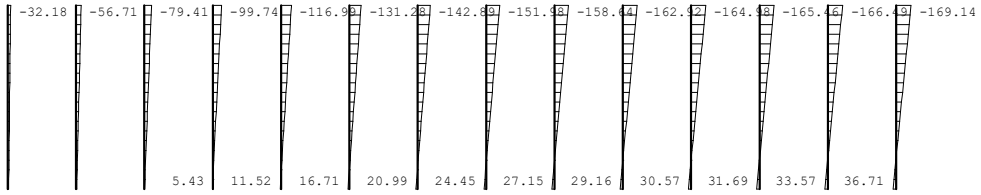
Ram: Ram 2
Uticaji u gredi: max T3= 214.15 / min T3= -214.15 kN

Opt. 21: Sy



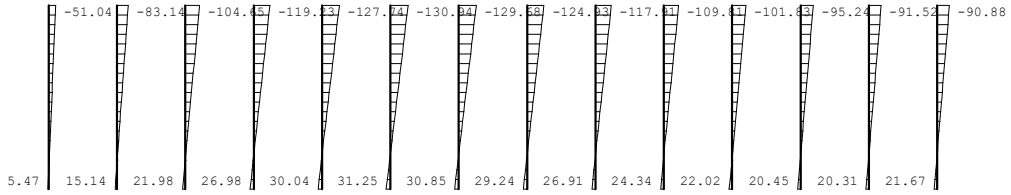
Ram: Ram 2
Uticaji u gredi: max T3= 1245.94 / min T3= -1245.94 kN

Opt. 1: sopstvena tezina (g)



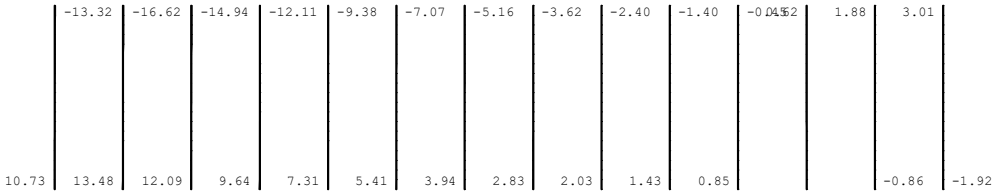
Ram: Ram 2
Uticaji u gredi: max M2= 75.36 / min M2= -423.31 kNm

Opt. 2: mrtav teret (Δg)



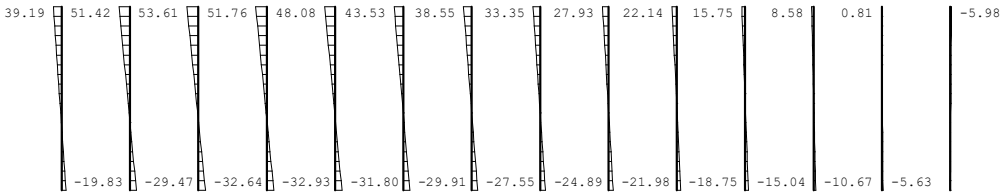
Ram: Ram 2
Uticaji u gredi: max M2= 100.20 / min M2= -277.76 kNm

Opt. 3: horizontalan pritisak tla



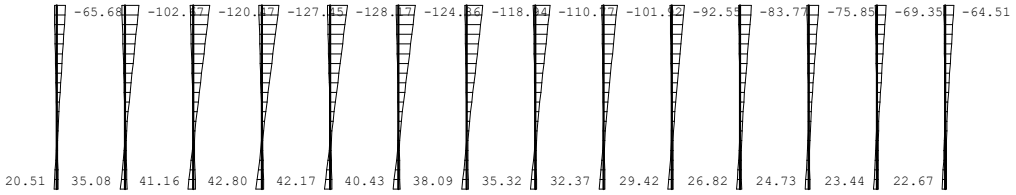
Ram: Ram 2
Uticaji u gredi: max M2= 667.95 / min M2= -149.38 kNm

Opt. 4: skupljanje



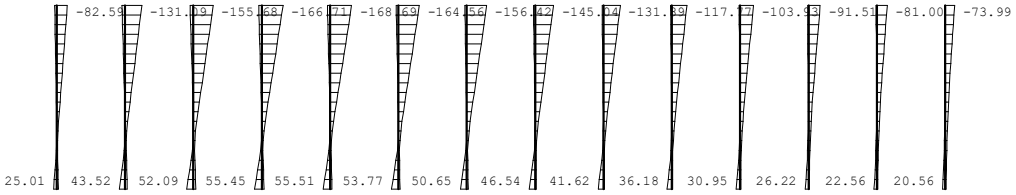
Ram: Ram 2
Uticaji u gredi: max M2= 91.79 / min M2= -174.51 kNm

Opt. 5: LM71



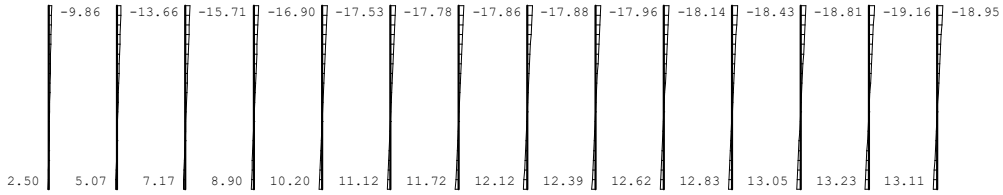
Ram: Ram 2
Uticaji u gredi: max M2= 125.67 / min M2= -276.93 kNm

Opt. 6: SW/2



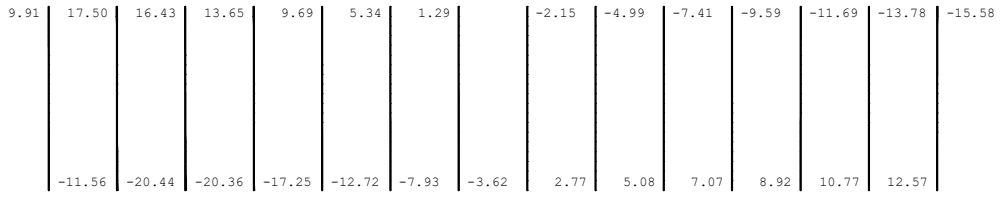
Ram: Ram 2
Uticaji u gredi: max M2= 152.89 / min M2= -293.46 kNm

Opt. 7: KP



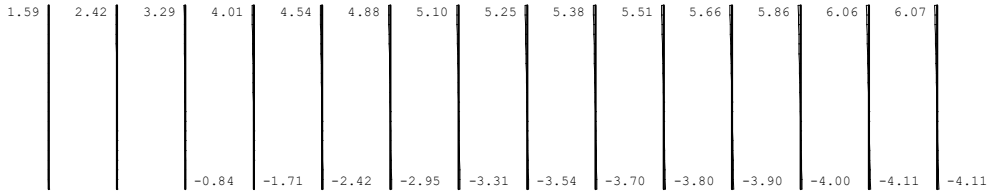
Ram: Ram 2
Uticaji u gredi: max M2= 30.35 / min M2= -127.35 kNm

Opt. 8: voz na nasipu ispred



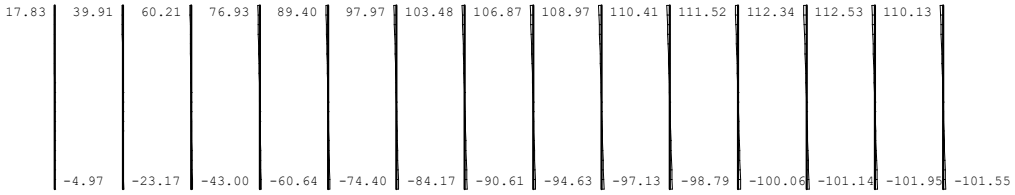
Ram: Ram 2
Uticaji u gredi: max M2= 580.03 / min M2= -752.98 kNm

Opt. 9: voz na nasipu iza



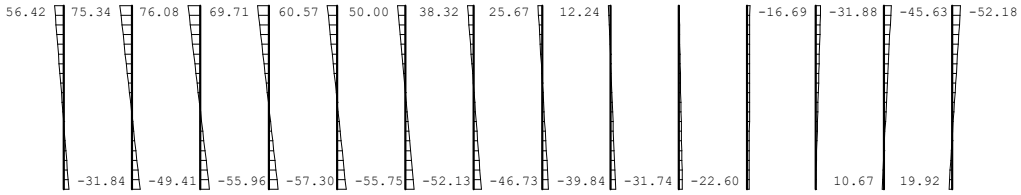
Ram: Ram 2
Uticaji u gredi: max M2= 91.87 / min M2= -28.16 kNm

Opt. 10: voz ispod



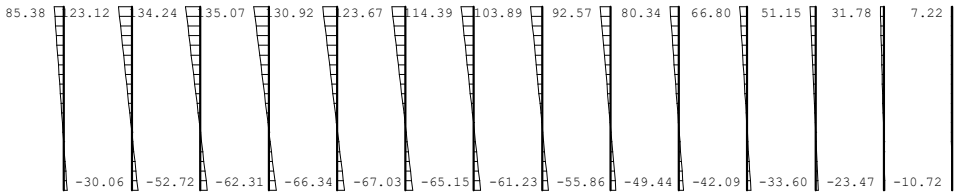
Ram: Ram 2
Uticaji u gredi: max M2= 1439.21 / min M2= -357.32 kNm

Opt. 11: komb temp 1



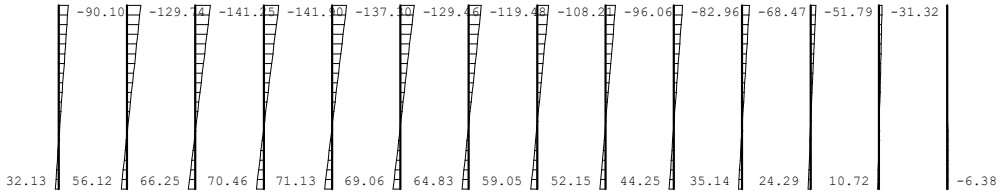
Ram: Ram 2
Uticaji u gredi: max M2= 205.60 / min M2= -231.28 kNm

Opt. 12: komb temp 2



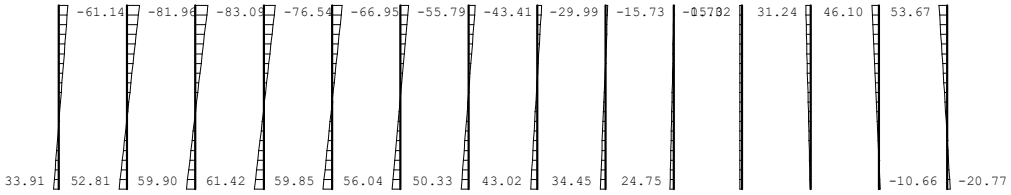
Ram: Ram 2
Uticaji u gredi: max M2= 338.92 / min M2= -285.09 kNm

Opt. 13: komb temp 3



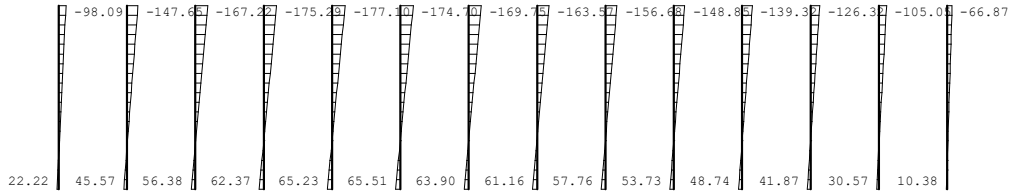
Ram: Ram 2
Uticaji u gredi: max M2= 302.30 / min M2= -353.82 kNm

Opt. 14: komb temp 4



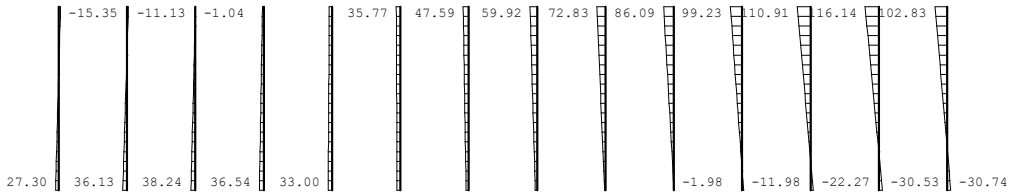
Ram: Ram 2
Uticaji u gredi: max M2= 248.49 / min M2= -223.30 kNm

Opt. 15: komb temp 5



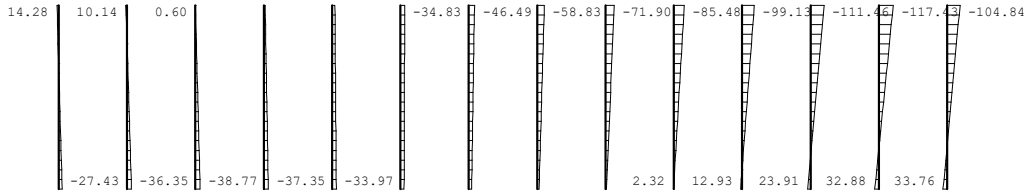
Ram: Ram 2
Uticaji u gredi: max M2= 303.18 / min M2= -508.70 kNm

Opt. 16: komb temp 6



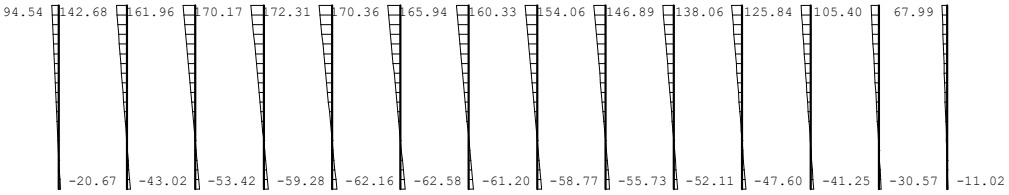
Ram: Ram 2
Uticaji u gredi: max M2= 317.05 / min M2= -124.87 kNm

Opt. 17: komb temp 7



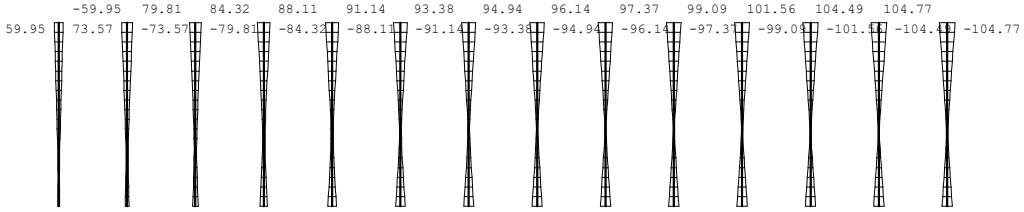
Ram: Ram 2
Uticaji u gredi: max M2= 113.10 / min M2= -305.01 kNm

Opt. 18: komb temp 8



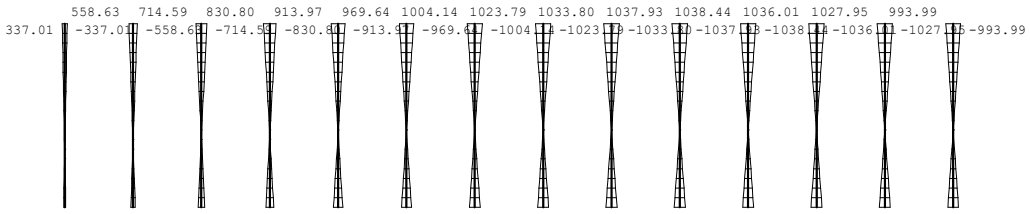
Ram: Ram 2
Uticaji u gredi: max M2= 497.53 / min M2= -291.55 kNm

Opt. 20: Sx



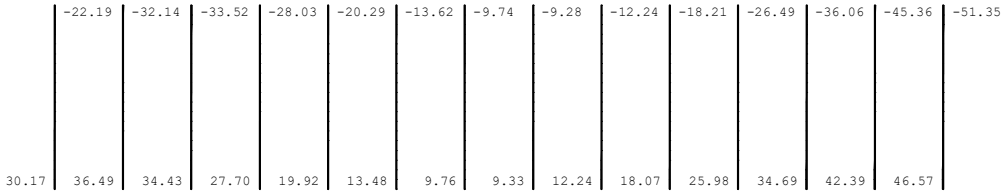
Ram: Ram 2
Uticaji u gredi: max M2= 499.20 / min M2= -499.20 kNm

Opt. 21: Sy



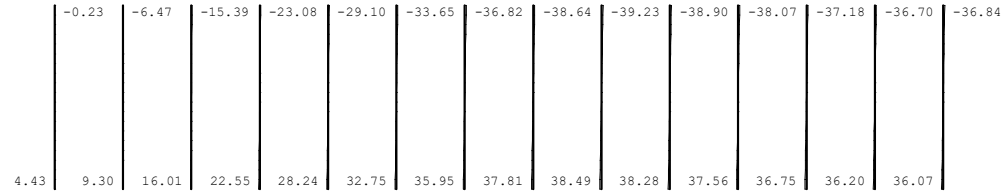
Ram: Ram 2
Uticaji u gredi: max M2= 5033.09 / min M2= -5033.09 kNm

Opt. 1: sopstvena tezina (g)



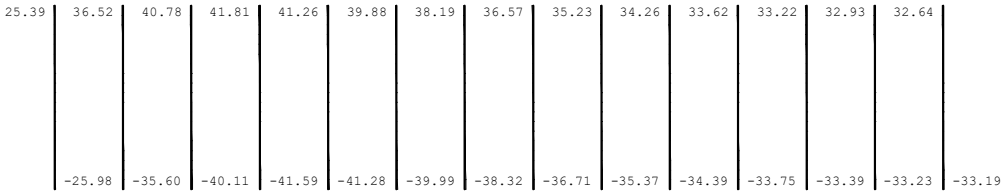
Ram: Ram 2
Uticaji u gredi: max M3= 2072.64 / min M3= -1564.84 kNm

Opt. 2: mrtav teret (Δg)



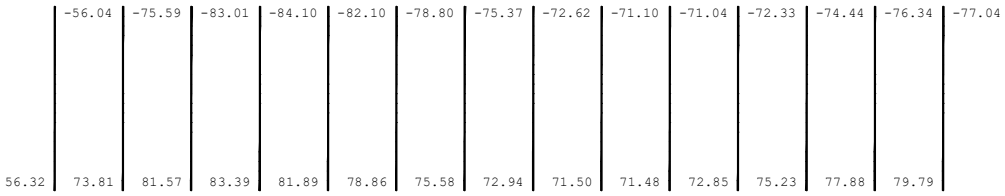
Ram: Ram 2
Uticaji u gredi: max M3= 880.28 / min M3= -145.33 kNm

Opt. 3: horizontalan pritisak tla



Ram: Ram 2
Uticaji u gredi: max M3= 371.90 / min M3= -1357.12 kNm

Opt. 4: skupljanje

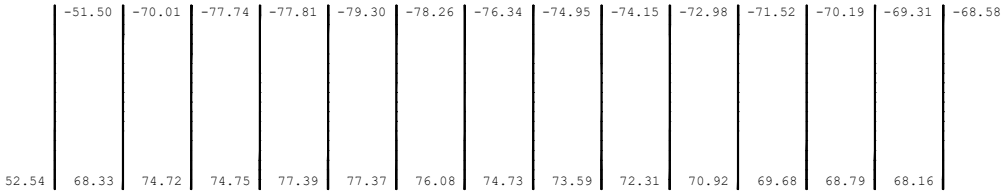


Ram: Ram 2
Uticaji u gredi: max M3= 3000.59 / min M3= -981.41 kNm

Opt. 5: LM71

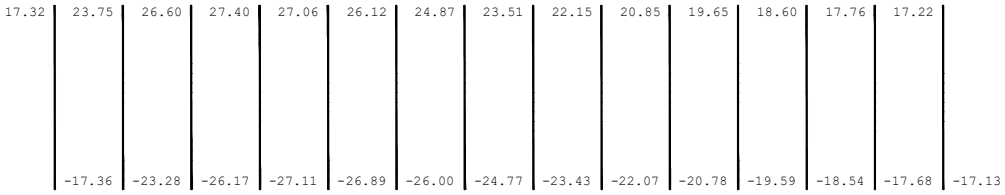
Ram: Ram 2
Uticaji u gredi: max M3= 2801.31 / min M3= -1508.24 kNm

Opt. 6: SW/2



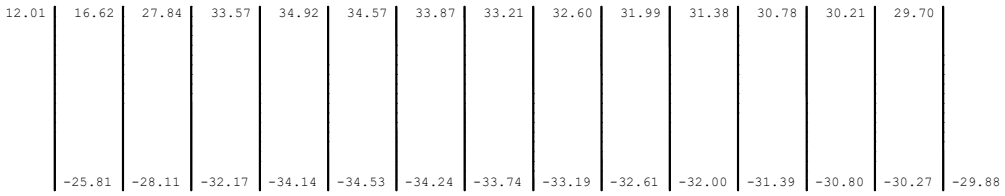
Ram: Ram 2
Uticaji u gredi: max M3= 3116.48 / min M3= -1493.47 kNm

Opt. 7: KP



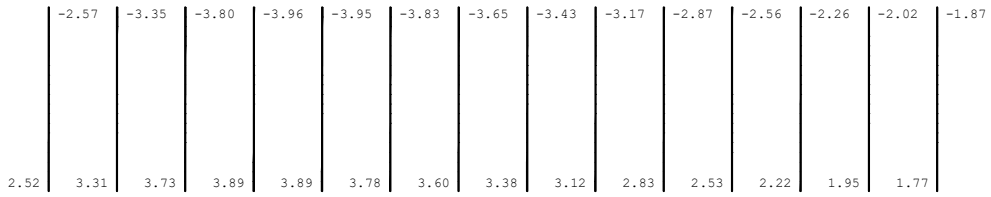
Ram: Ram 2
Uticaji u gredi: max M3= 307.41 / min M3= -959.62 kNm

Opt. 8: voz na nasipu ispred



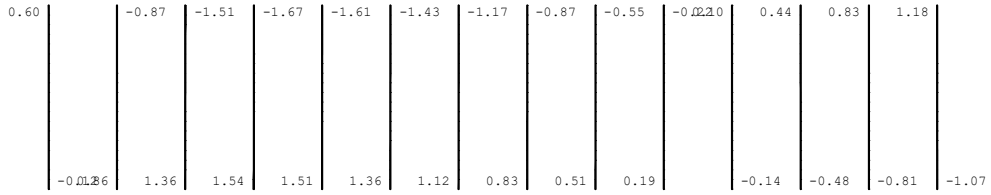
Ram: Ram 2
Uticaji u gredi: max M3= 648.17 / min M3= -2681.02 kNm

Opt. 9: voz na nasipu iza



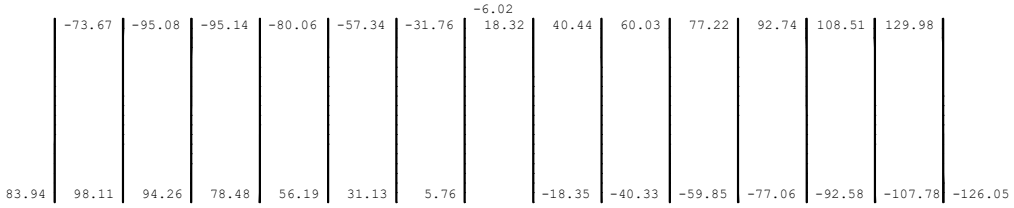
Ram: Ram 2
Uticaji u gredi: max M3= 171.31 / min M3= -80.85 kNm

Opt. 10: voz ispod



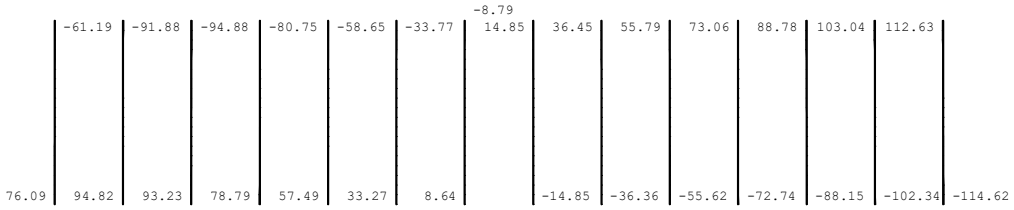
Ram: Ram 2
Uticaji u gredi: max M3= 98.18 / min M3= -77.88 kNm

Opt. 11: komb temp 1



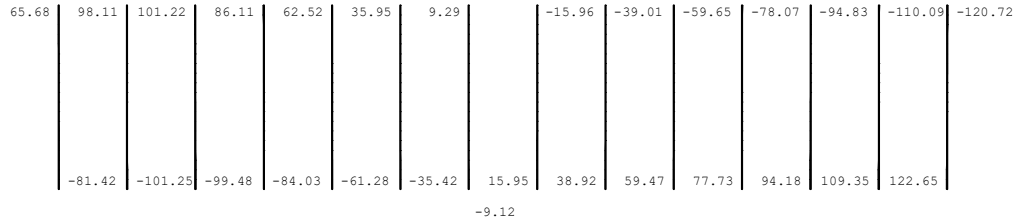
Ram: Ram 2
Uticaji u gredi: max M3= 5303.29 / min M3= -1219.01 kNm

Opt. 12: komb temp 2



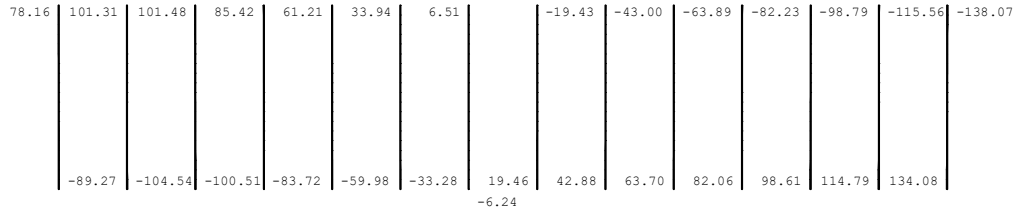
Ram: Ram 2
Uticaji u gredi: max M3= 4974.36 / min M3= -1184.84 kNm

Opt. 13: komb temp 3



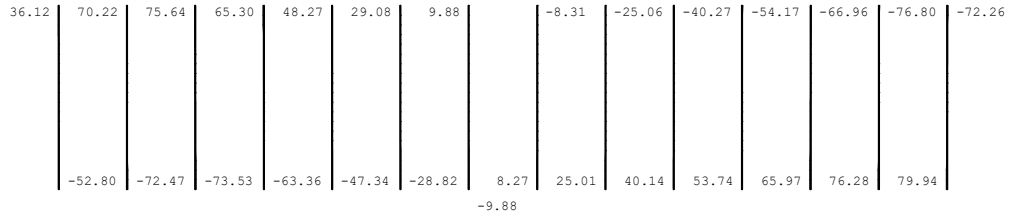
Ram: Ram 2
Uticaji u gredi: max M3= 1263.77 / min M3= -5316.95 kNm

Opt. 14: komb temp 4



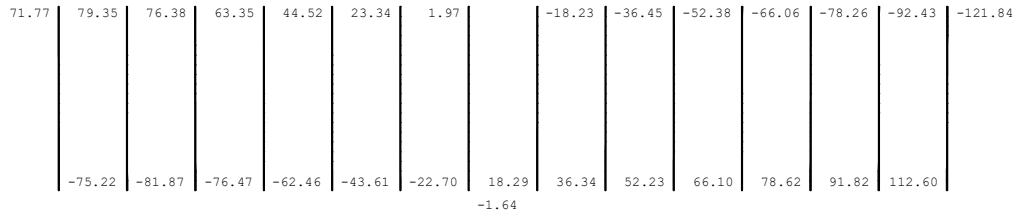
Ram: Ram 2
Uticaji u gredi: max M3= 1296.31 / min M3= -5645.88 kNm

Opt. 15: komb temp 5



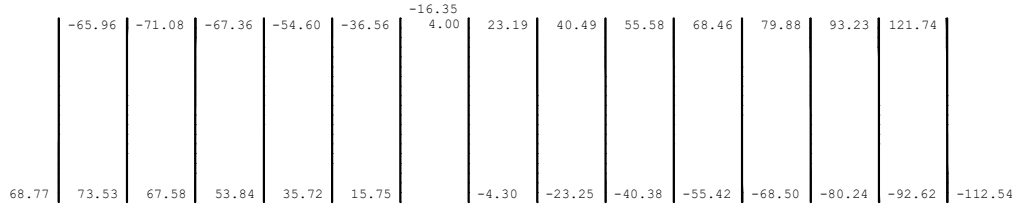
Ram: Ram 2
Uticaji u gredi: max M3= 1746.75 / min M3= -3641.16 kNm

Opt. 16: komb temp 6



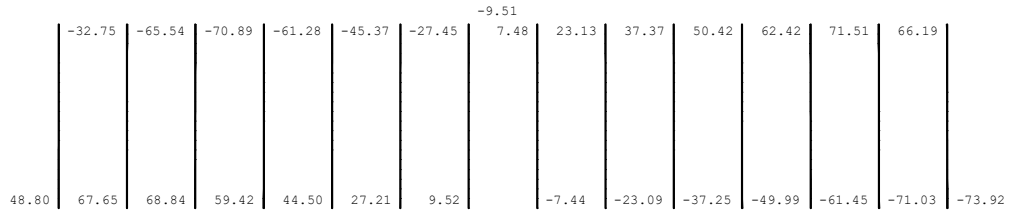
Ram: Ram 2
Uticaji u gredi: max M3= 1097.69 / min M3= -4580.97 kNm

Opt. 17: komb temp 7



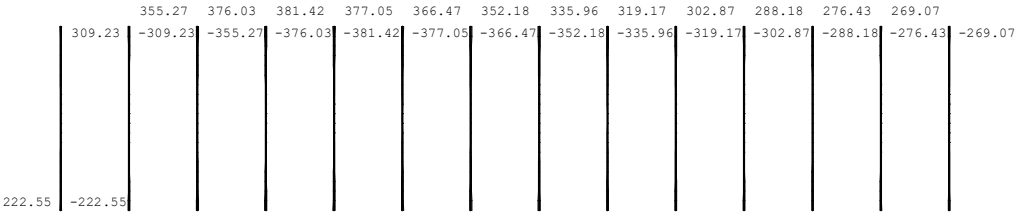
Ram: Ram 2
Uticaji u gredi: max M3= 4195.22 / min M3= -1031.75 kNm

Opt. 18: komb temp 8



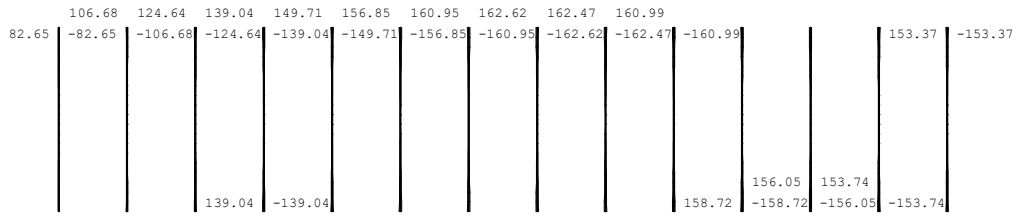
Ram: Ram 2
Uticaji u gredi: max M3= 3384.22 / min M3= -1735.51 kNm

Opt. 20: Sx

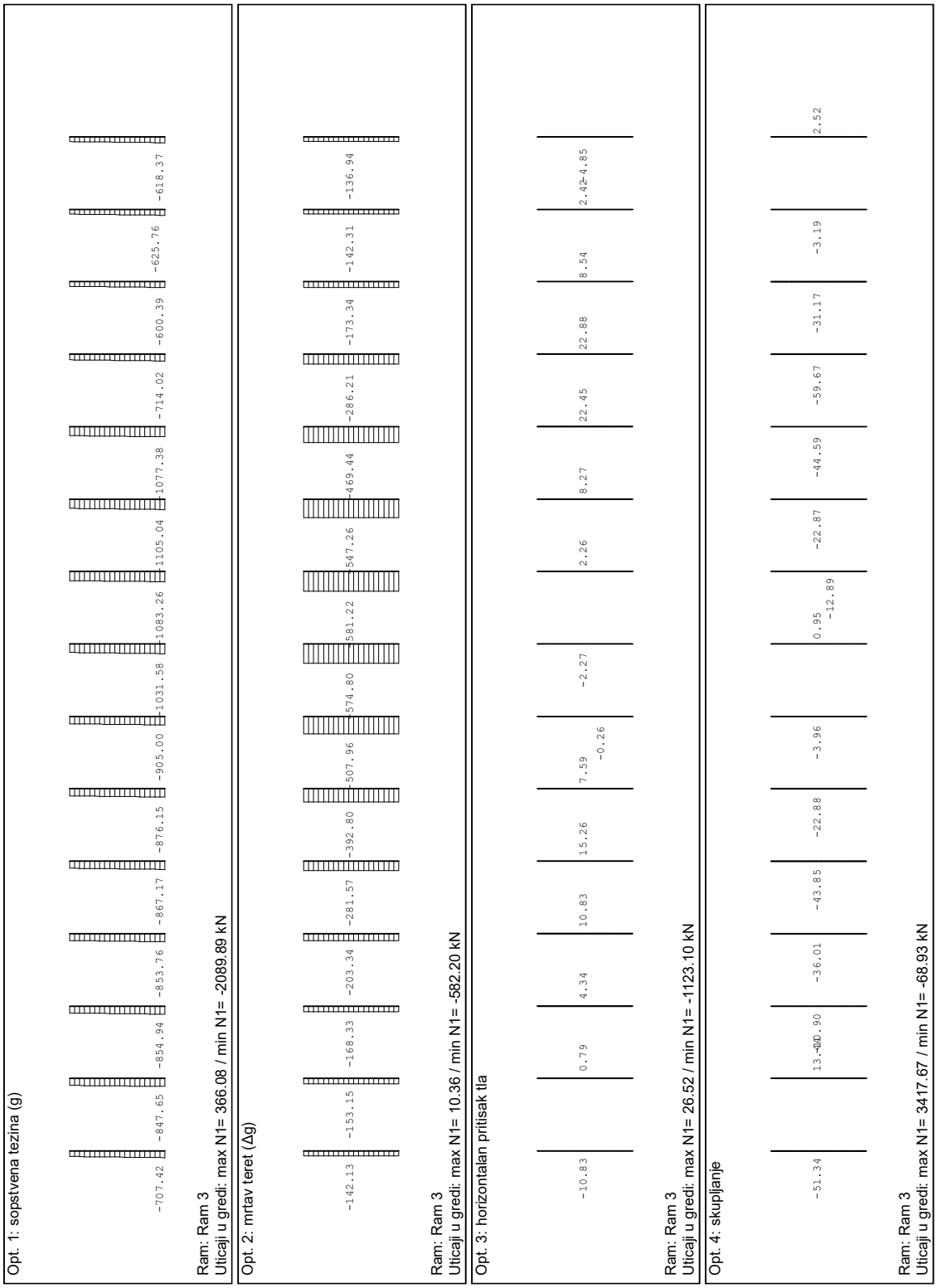


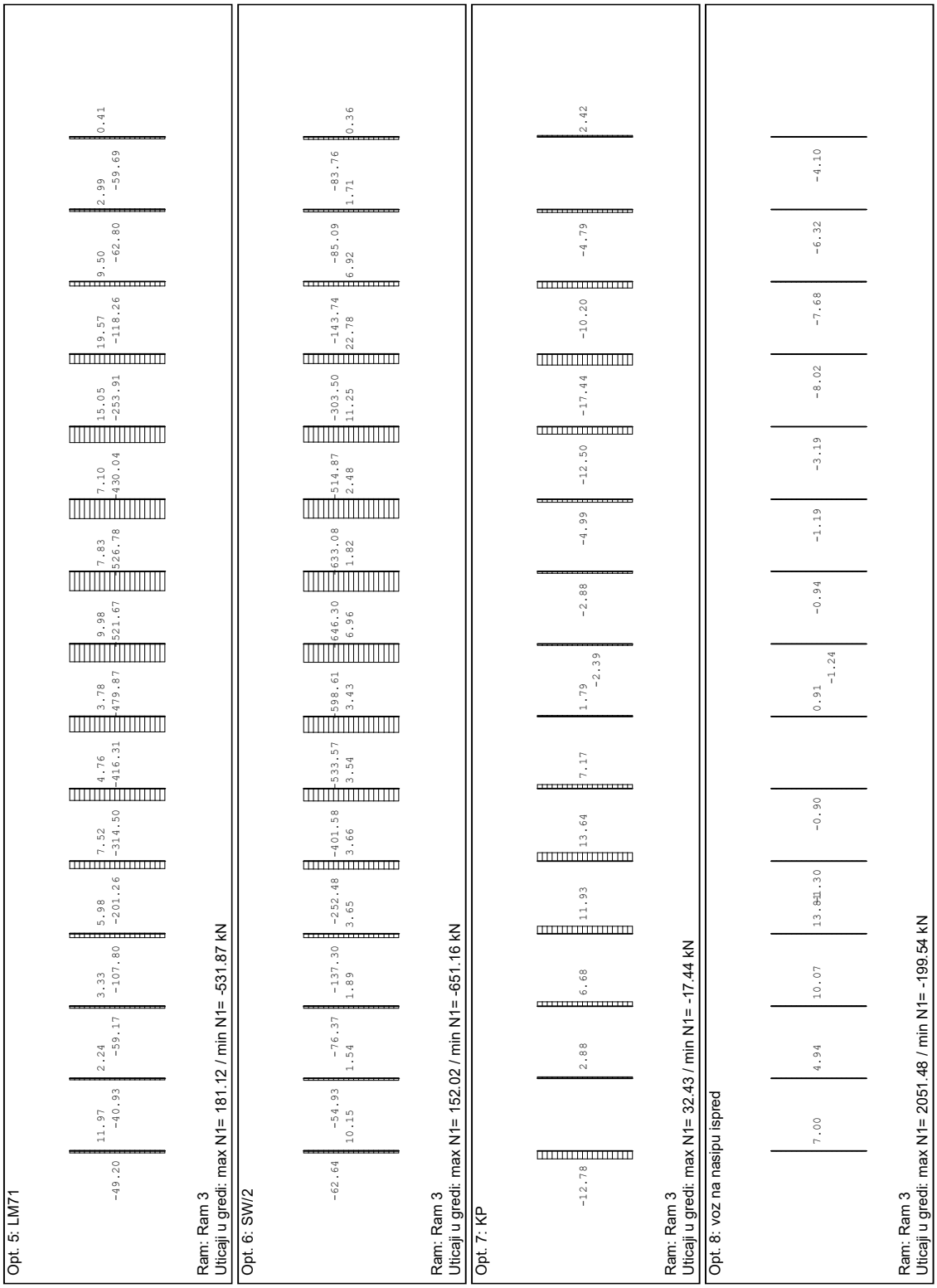
Ram: Ram 2
Uticaji u gredi: max M3= 12700.90 / min M3= -12700.90 kNm

Opt. 21: Sy



Ram: Ram 2
Uticaji u gredi: max M3= 4776.97 / min M3= -4776.97 kNm


Opt. 1: sopstvena tezina (g)
-707.42 -847.65 -854.94 -853.76 -867.17 -876.15 -905.00 -1031.58 1083.26 1105.04 1077.38 -714.02 -600.39 -625.76 -618.37
Ram: Ram 3
Uticaji u gredi: max N1= 366.08 / min N1= -2089.89 kN
Opt. 2: mrtav teret (Δg)
-142.13 -153.15 -168.33 -203.34 -281.57 -392.80 507.96 574.80 581.22 547.26 469.44 -286.21 -173.34 -142.31 -136.94
Ram: Ram 3
Uticaji u gredi: max N1= 10.36 / min N1= -582.20 kN
Opt. 3: horizontalan pritisak tla
-10.83 0.79 4.34 10.83 15.26 7.59 -0.26 -2.27 2.26 8.27 22.45 22.88 8.54 2.42 4.85
Ram: Ram 3
Uticaji u gredi: max N1= 26.52 / min N1= -1123.10 kN
Opt. 4: skupljanje
-51.34 13.40 -40.90 -36.01 -43.85 -22.88 -3.96 0.95 -12.89 -22.87 -44.59 -59.67 -31.17 -3.19 2.52
Ram: Ram 3
Uticaji u gredi: max N1= 3417.67 / min N1= -68.93 kN


Opt. 5: LM71
-49.20
11.97
-40.93
2.24
-59.17
3.33
-107.80
5.98
-201.26
7.52
-314.50
4.76
-416.31
3.78
479.87
9.98
521.67
7.83
526.78
7.10
430.04
15.05
-253.91
19.57
-118.26
9.50
-62.80
2.99
-59.69
0.41
Ram: Ram 3
Uticaji u gredi: max N1= 181.12 / min N1= -531.87 kN
Opt. 6: SW/2
-62.64
-54.93
10.15
-76.37
1.54
-137.30
1.89
-252.48
3.65
-401.58
3.66
-533.57
3.54
598.61
3.43
646.30
6.96
633.08
1.82
514.87
2.48
-303.50
11.25
-143.74
22.78
-85.09
6.92
-83.76
1.71
0.36
Ram: Ram 3
Uticaji u gredi: max N1= 152.02 / min N1= -651.16 kN
Opt. 7: KP
-12.78
2.88
6.68
11.93
13.64
7.17
1.79
-2.39
-2.88
-4.99
-12.50
-17.44
-10.20
-4.79
2.42
Ram: Ram 3
Uticaji u gredi: max N1= 32.43 / min N1= -17.44 kN
Opt. 8: voz na nasipu ispred
7.00
4.94
10.07
13.61
11.30
-0.90
0.91
-1.24
-0.94
-1.19
-3.19
-8.02
-7.68
-6.32
-4.10
Ram: Ram 3
Uticaji u gredi: max N1= 2051.48 / min N1= -199.54 kN

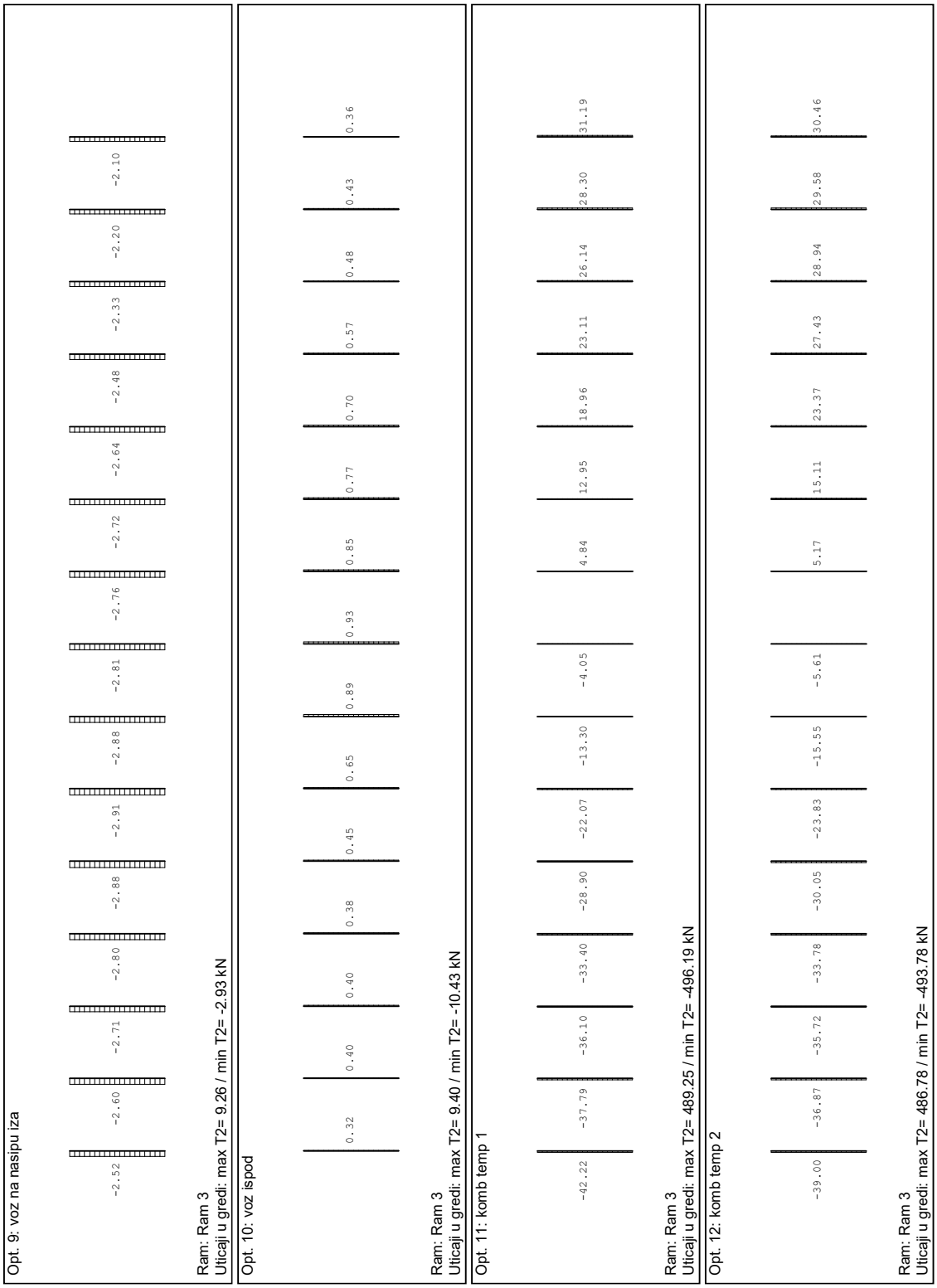
Opt. 9: voz na nasipu iza
-0.84
2.95
-1.67
-2.58
-2.60
-1.43
-0.40
0.92
0.94
1.55
3.81
5.34
3.07
1.39
-0.83
Ram: Ram 3
Uticaji u gredi: max N1= 5.34 / min N1= -107.25 kN
Opt. 10: voz ispod
-4.53
-2.38
-6.60
-6.63
-3.02
1.54
-9.49
0.18
-8.95
-8.26
-9.18
-11.62
-8.57
-7.40
-6.15
Ram: Ram 3
Uticaji u gredi: max N1= 14.59 / min N1= -99.24 kN
Opt. 11: komb temp 1
37.15
-41.10
13.04
-76.50
-85.40
-48.03
-15.11
-53.40
-64.86
-92.02
-144.06
-109.91
-79.66
-24.39
57.72
Ram: Ram 3
Uticaji u gredi: max N1= 3711.78 / min N1= -147.62 kN
Opt. 12: komb temp 2
-28.21
58.35
-73.04
-106.22
-100.59
-52.07
-13.38
38.32
9.63
-5.59
-47.37
-149.17
-109.34
-64.12
-6.41
Ram: Ram 3
Uticaji u gredi: max N1= 3732.59 / min N1= -149.17 kN

Opt. 13: komb temp 3
-61.54
28.72
76.85
112.31
106.79
55.40
-37.82
14.33
-7.79
8.84
53.75
157.81
115.64
67.07
4.70
Ram: Ram 3
Uticaji u gredi: max N1= 157.81 / min N1= -3980.74 kN
Opt. 14: komb temp 4
-40.33
-12.53
44.90
82.59
91.60
51.37
16.06
53.90
66.70
95.27
150.44
118.54
85.96
27.34
-59.43
Ram: Ram 3
Uticaji u gredi: max N1= 156.12 / min N1= -3959.92 kN
Opt. 15: komb temp 5
-68.49
65.00
91.29
115.54
96.09
45.80
8.93
-124.99
-84.32
-84.43
-61.56
159.73
118.00
92.16
71.10
Ram: Ram 3
Uticaji u gredi: max N1= 159.73 / min N1= -3007.48 kN
Opt. 16: komb temp 6
-7.91
-52.86
0.03
30.64
52.70
34.28
13.86
137.05
128.50
162.51
214.70
47.54
33.19
-21.35
-112.15
Ram: Ram 3
Uticaji u gredi: max N1= 214.70 / min N1= -2948.01 kN

Opt. 17: komb temp 7
-0.59
-1.46
48.36
-29.52
-49.87
-32.56
-13.84
-137.38
-126.97
-159.30
-191.08
-9.42
-25.80
2.87
77.50
Ram: Ram 3
Uticaji u gredi: max N1= 2764.07 / min N1= -195.84 kN
Opt. 18: komb temp 8
66.35
-88.43
-110.97
-91.44
-43.30
-8.22
125.37
85.70
86.87
66.35
-153.25
-113.28
-89.95
-72.38
Ram: Ram 3
Uticaji u gredi: max N1= 2821.37 / min N1= -153.25 kN
Opt. 20: Sx
-291.44
-95.10
291.44
-48.10
95.10
-82.64
48.10
-135.76
82.64
-85.90
135.76
-22.63
85.90
-26.60
22.63
-42.67
26.60
-76.45
42.67
-147.20
76.45
-147.97
147.20
-52.83
147.97
-67.95
52.83
-155.03
67.95
155.03
Ram: Ram 3
Uticaji u gredi: max N1= 1937.27 / min N1= -1937.27 kN
Opt. 21: Sy
-510.66
-511.97
510.66
-492.89
511.97
-464.32
492.89
-334.06
464.32
-194.67
334.06
-106.40
194.67
-40.45
106.40
-26.25
40.45
-11.58
26.25
-86.38
11.58
-401.81
86.38
-496.08
401.81
-506.38
496.08
506.38
-528.42
528.42
Ram: Ram 3
Uticaji u gredi: max N1= 2276.05 / min N1= -2276.05 kN

Opt. 1: sopstvena tezina (g)
10.47
7.94
5.04
3.42
3.36
4.37
5.61
4.53
-0.03
-6.48
-13.77
-17.34
-14.79
-13.41
-14.42
Ram: Ram 3
Uticaji u gredi: max T2= 593.92 / min T2= -445.47 kN
Opt. 2: mrtav teret (Δg)
2.13
2.49
4.03
6.41
8.58
9.01
6.94
2.32
-3.21
-8.60
-12.61
-13.85
-11.42
-8.63
-7.08
Ram: Ram 3
Uticaji u gredi: max T2= 234.47 / min T2= -174.32 kN
Opt. 3: horizontalan pritisak tla
-2.67
-2.65
-2.51
-2.21
-1.71
-1.19
-0.71
-0.24
0.37
1.10
2.43
3.36
3.79
3.91
Ram: Ram 3
Uticaji u gredi: max T2= 17.86 / min T2= -19.18 kN
Opt. 4: skupljanje
3.55
1.42
-1.62
-4.00
-5.42
-5.56
-4.55
-2.87
-1.15
0.07
0.33
-0.98
-3.18
-5.97
-8.77
Ram: Ram 3
Uticaji u gredi: max T2= 414.92 / min T2= -420.31 kN

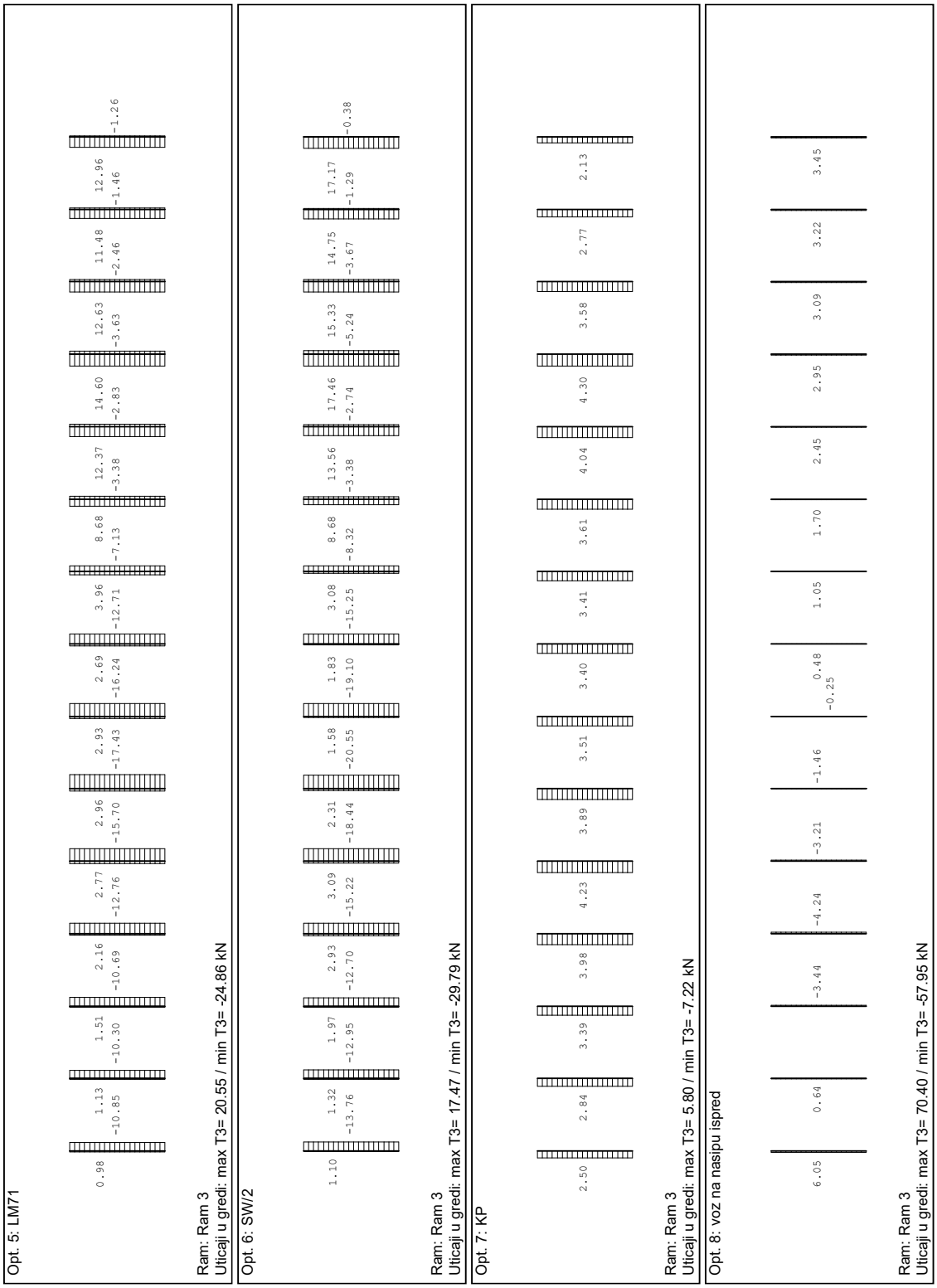
Opt. 5: LM71
-2.98 -3.10 -3.36 -4.27 -6.00 -8.79 -11.60 -14.22 -16.52 -17.65 -17.29 -14.95 -11.59 -9.02 -7.61 3.02
4.68 5.16 6.60 9.15 12.68 15.35 16.54 16.44 15.36 12.45 8.45 4.94 3.40 3.18
Ram: Ram 3
Uticaji u gredi: max T2= 416.00 / min T2= -408.37 kN
Opt. 6: SW/2
-3.66 4.58 5.21 7.06 10.49 14.98 17.66 17.07 14.22 13.45 10.54 6.34 4.41 4.10 3.86 3.67
-3.81 -4.02 -4.25 -4.49 -6.03 -8.51 -11.19 -15.80 -20.90 -21.97 -18.85 -13.66 -9.50 -7.64
Ram: Ram 3
Uticaji u gredi: max T2= 529.12 / min T2= -500.06 kN
Opt. 7: KP
6.54 6.80 7.15 7.55 7.97 8.26 8.36 8.34 8.31 8.25 8.07 7.65 7.19 6.82 6.51
Ram: Ram 3
Uticaji u gredi: max T2= 8.83 / min T2= -28.37 kN
Opt. 8: voz na nasipu ispred
8.35 8.19 6.93 5.55 4.81 4.65 4.76 4.87 4.93 5.00 5.03 4.90 4.68 4.46 4.26
Ram: Ram 3
Uticaji u gredi: max T2= 8.41 / min T2= -25.59 kN


Opt. 9: voz na nasipu iza
-2.52
-2.60
-2.71
-2.80
-2.88
-2.91
-2.88
-2.81
-2.76
-2.72
-2.64
-2.48
-2.33
-2.20
-2.10
Ram: Ram 3
Uticaji u gredi: max T2= 9.26 / min T2= -2.93 kN
Opt. 10: voz ispod
0.32
0.40
0.40
0.38
0.45
0.65
0.89
0.93
0.85
0.77
0.70
0.57
0.48
0.43
0.36
Ram: Ram 3
Uticaji u gredi: max T2= 9.40 / min T2= -10.43 kN
Opt. 11: komb temp 1
-42.22
-37.79
-36.10
-33.40
-28.90
-22.07
-13.30
-4.05
4.84
12.95
18.96
23.11
26.14
28.30
31.19
Ram: Ram 3
Uticaji u gredi: max T2= 489.25 / min T2= -496.19 kN
Opt. 12: komb temp 2
-39.00
-36.87
-35.72
-33.78
-30.05
-23.83
-15.55
-5.61
5.17
15.11
23.37
27.43
28.94
29.58
30.46
Ram: Ram 3
Uticaji u gredi: max T2= 486.78 / min T2= -493.78 kN

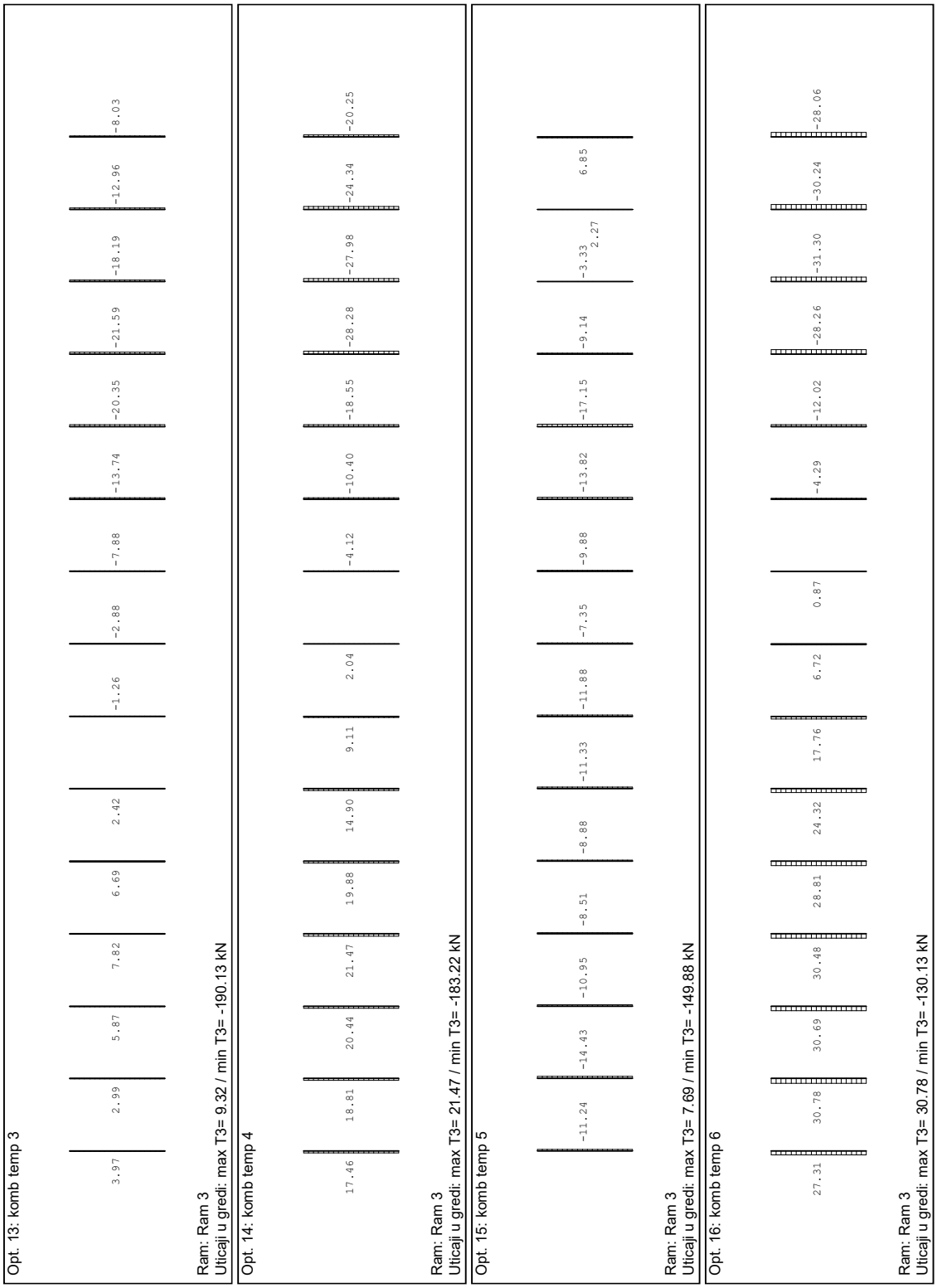
Opt. 13: komb temp 3
41.71
39.36
38.11
36.02
32.02
25.36
16.51
5.94
-5.51
-16.05
-24.78
-29.12
-30.78
-31.51
-32.51
Ram: Ram 3
Uticaji u gredi: max T2= 526.77 / min T2= -519.31 kN
Opt. 14: komb temp 4
44.93
40.27
38.49
35.64
30.86
23.60
14.26
4.37
-5.17
-13.88
-20.38
-24.80
-27.97
-30.23
-33.25
Ram: Ram 3
Uticaji u gredi: max T2= 529.19 / min T2= -521.79 kN
Opt. 15: komb temp 5
27.89
28.55
28.18
27.42
25.23
20.87
14.76
6.10
-4.48
-14.32
-23.23
-26.39
-26.04
-24.98
-23.61
Ram: Ram 3
Uticaji u gredi: max T2= 461.50 / min T2= -386.88 kN
Opt. 16: komb temp 6
37.09
31.17
29.27
26.32
21.93
15.84
8.32
1.63
-3.52
-8.13
-10.64
-14.05
-18.02
-21.32
-25.71
Ram: Ram 3
Uticaji u gredi: max T2= 399.44 / min T2= -393.95 kN

Opt. 17: komb temp 7
-34.46
-28.71
-26.87
-24.06
-19.91
-14.23
-7.29
-1.31
3.18
7.32
9.87
14.56
19.68
23.44
27.67
Ram: Ram 3
Uticaji u gredi: max T2= 373.06 / min T2= -374.35 kN
Opt. 18: komb temp 8
-25.86
-26.68
-26.39
-25.74
-23.76
-19.73
-14.04
-5.85
4.23
13.62
22.17
25.12
24.66
23.53
22.07
Ram: Ram 3
Uticaji u gredi: max T2= 362.48 / min T2= -444.93 kN
Opt. 20: Sx
-93.33
-96.67
93.33
-101.16
96.67
-106.13
101.16
-111.53
106.13
-115.48
111.53
-116.75
115.48
-115.92
116.75
-114.59
115.92
-112.44
114.59
-108.62
112.44
-103.08
108.62
-97.91
103.08
-93.59
97.91
-89.96
93.59
89.96
Ram: Ram 3
Uticaji u gredi: max T2= 395.59 / min T2= -395.59 kN
Opt. 21: Sy
-32.17
-31.81
32.17
-30.78
31.81
-28.27
30.78
-25.74
28.27
-24.89
25.74
-24.49
24.89
-25.07
24.49
-25.27
25.07
-23.09
25.27
-19.89
23.09
-20.12
19.89
-23.86
20.12
-26.71
23.86
-28.32
26.71
28.32
Ram: Ram 3
Uticaji u gredi: max T2= 218.19 / min T2= -218.19 kN

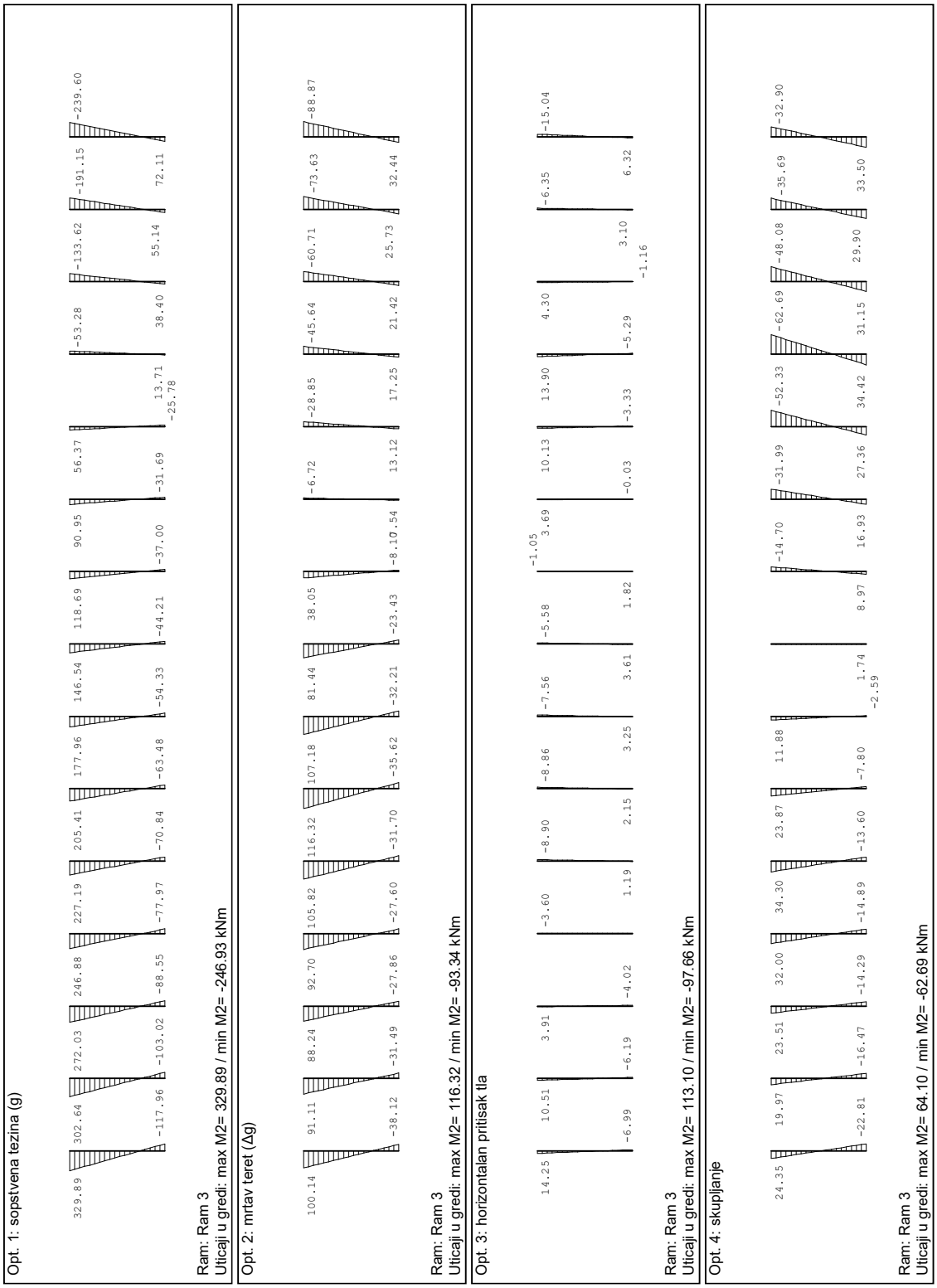
Opt. 1: sopstvena tezina (g)
-45.93
-41.61
-36.98
-33.32
-30.57
-27.58
-23.82
-19.56
-15.97
-12.58
-8.43
6.87
17.64
25.26
31.97
Ram: Ram 3
Uticaji u gredi: max T3= 45.40 / min T3= -45.93 kN
Opt. 2: mrtav teret (Δg)
-14.18
-12.57
-11.91
-12.34
-14.10
-15.58
-14.30
-10.76
-4.73
1.46
4.30
6.45
8.42
10.19
12.44
Ram: Ram 3
Uticaji u gredi: max T3= 13.14 / min T3= -18.36 kN
Opt. 3: horizontalan pritisak tla
-2.18
-1.71
-0.81
0.24
1.03
1.13
1.11
0.94
0.29
-0.38
-1.38
-1.97
-0.56
0.97
2.19
Ram: Ram 3
Uticaji u gredi: max T3= 2.42 / min T3= -128.50 kN
Opt. 4: skupljanje
-4.84
-3.74
-3.88
-4.81
-4.91
-3.25
-1.48
0.06
2.43
5.02
8.17
9.96
8.13
6.73
6.81
Ram: Ram 3
Uticaji u gredi: max T3= 73.29 / min T3= -5.10 kN

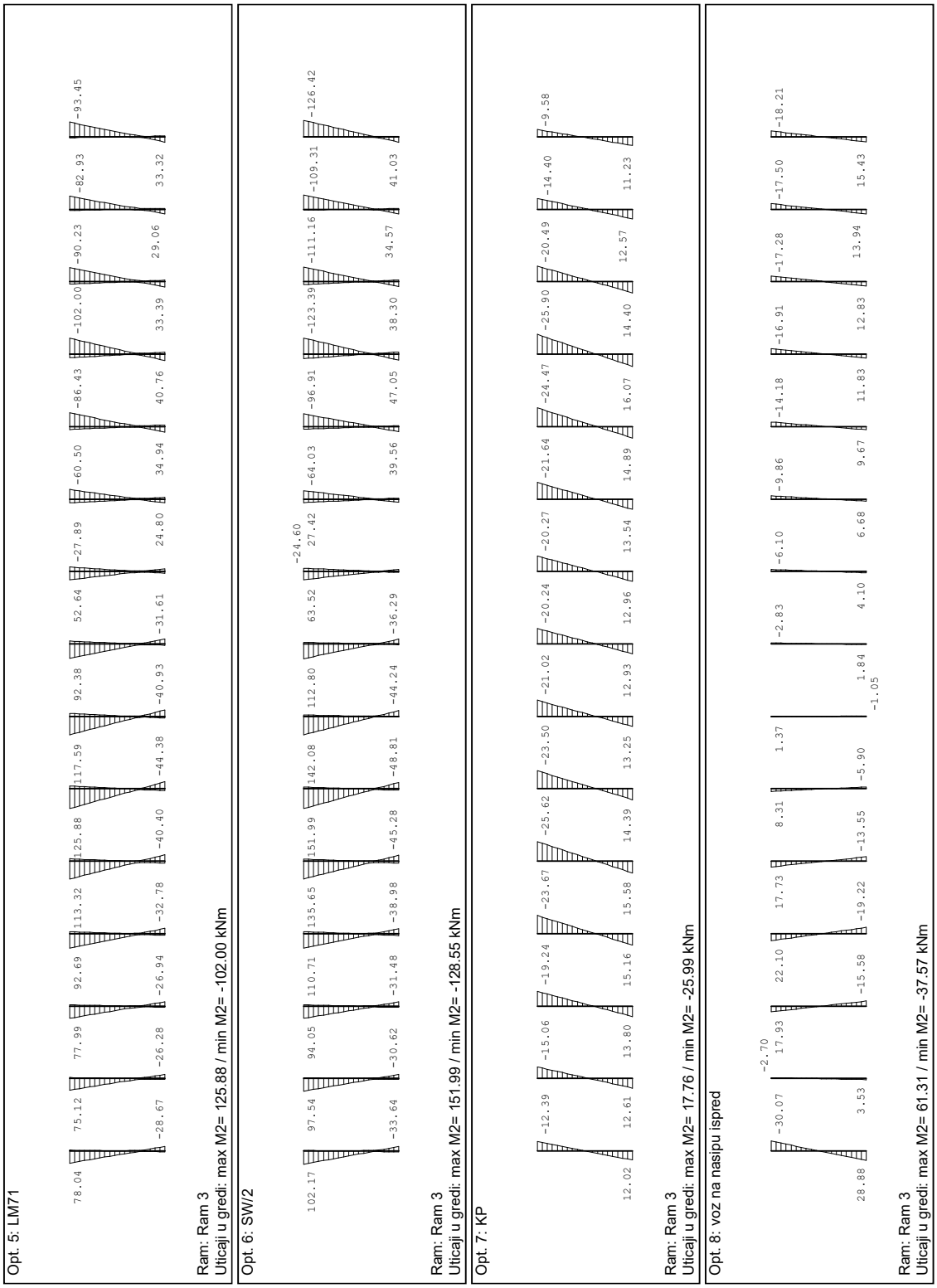

Opt. 5: LM71
0.98 1.13 -10.85 1.51 -10.30 2.16 -10.69 2.77 -12.76 2.96 -15.70 2.93 -17.43 2.69 -16.24 3.96 -12.71 8.68 -7.13 12.37 -3.38 14.60 -2.83 12.63 -3.63 11.48 -2.46 12.96 -1.46 -1.26
Ram: Ram 3
Uticaji u gredi: max T3= 20.55 / min T3= -24.86 kN
Opt. 6: SW/2
1.10 1.32 -13.76 1.97 -12.95 2.93 -12.70 3.09 -15.22 2.31 -18.44 1.58 -20.55 1.83 -19.10 3.08 -15.25 8.68 -8.32 13.56 -3.38 17.46 -2.74 15.33 -5.24 14.75 -3.67 17.17 -1.29 -0.38
Ram: Ram 3
Uticaji u gredi: max T3= 17.47 / min T3= -29.79 kN
Opt. 7: KP
2.50 2.84 3.39 3.98 4.23 3.89 3.51 3.40 3.41 3.61 4.04 4.30 3.58 2.77 2.13
Ram: Ram 3
Uticaji u gredi: max T3= 5.80 / min T3= -7.22 kN
Opt. 8: voz na nasipu ispred
6.05 0.64 -3.44 -4.24 -3.21 -1.46 -0.25 0.48 1.05 1.70 2.45 2.95 3.09 3.22 3.45
Ram: Ram 3
Uticaji u gredi: max T3= 70.40 / min T3= -57.95 kN

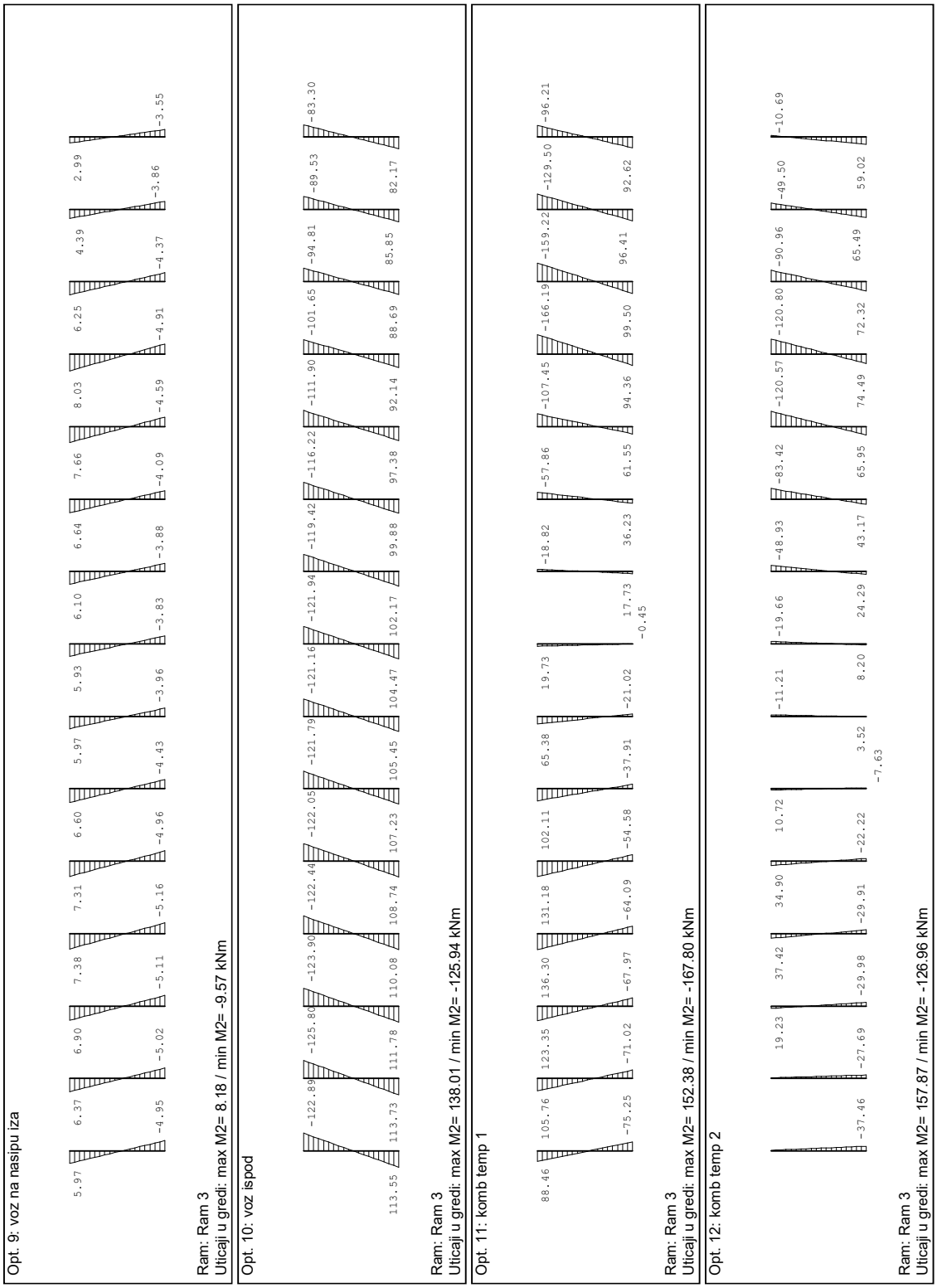
Opt. 9: voz na nasipu iza
-1.12
-1.17
-1.23
-1.29
-1.26
-1.13
-1.02
-1.00
-1.02
-1.10
-1.26
-1.33
-1.09
-0.85
-0.67
Ram: Ram 3
Uticaji u gredi: max T3= 0.68 / min T3= -10.43 kN
Opt. 10: voz ispod
24.25
24.57
24.17
23.85
23.67
23.49
23.24
23.22
22.73
22.16
21.46
19.88
18.82
17.99
16.97
Ram: Ram 3
Uticaji u gredi: max T3= 34.31 / min T3= -42.31 kN
Opt. 11: komb temp 1
-16.79
-18.13
-19.62
-20.55
-19.05
-14.36
-8.86
3.75
-2.07
9.65
17.33
26.72
26.54
23.17
19.37
Ram: Ram 3
Uticaji u gredi: max T3= 171.55 / min T3= -20.55 kN
Opt. 12: komb temp 2
-3.30
-2.31
-5.05
-6.91
-5.86
-1.88
1.51
2.86
7.51
12.98
19.13
20.03
16.75
11.79
7.15
Ram: Ram 3
Uticaji u gredi: max T3= 178.46 / min T3= -8.65 kN

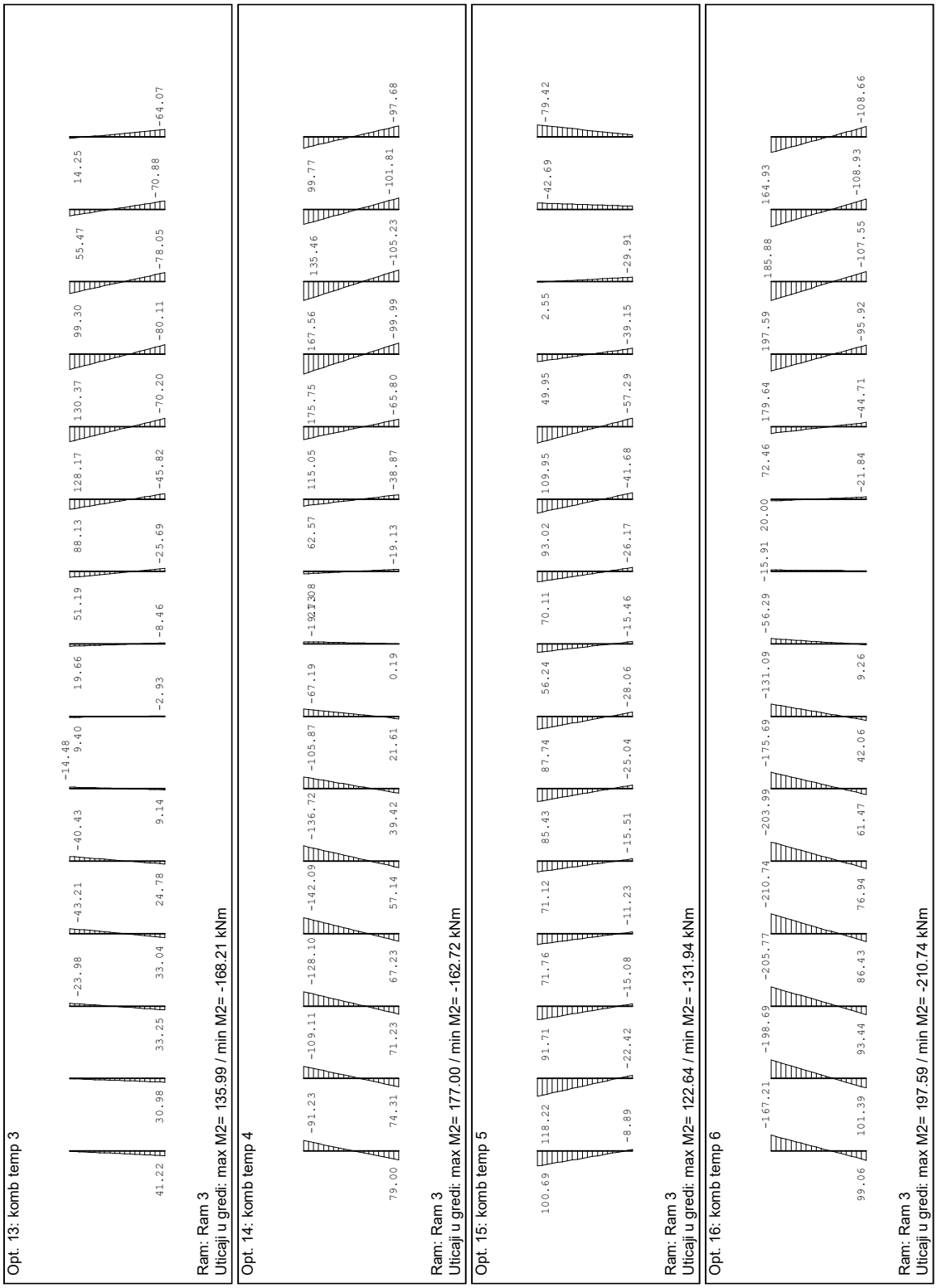

Opt. 13: komb temp 3
3.97
2.99
5.87
7.82
6.69
2.42
-1.26
-2.88
-7.88
-13.74
-20.35
-21.59
-18.19
-12.96
-8.03
Ram: Ram 3
Uticaji u gredi: max T3= 9.32 / min T3= -190.13 kN
Opt. 14: komb temp 4
17.46
18.81
20.44
21.47
19.88
14.90
9.11
2.04
-4.12
-10.40
-18.55
-28.28
-27.98
-24.34
-20.25
Ram: Ram 3
Uticaji u gredi: max T3= 21.47 / min T3= -183.22 kN
Opt. 15: komb temp 5
-11.24
-14.43
-10.95
-8.51
-8.88
-11.33
-11.88
-7.35
-9.88
-13.82
-17.15
-9.14
-3.33
2.27
6.85
Ram: Ram 3
Uticaji u gredi: max T3= 7.69 / min T3= -149.88 kN
Opt. 16: komb temp 6
27.31
30.78
30.69
30.48
28.81
24.32
17.76
6.72
0.87
-4.29
-12.02
-28.26
-31.30
-30.24
-28.06
Ram: Ram 3
Uticaji u gredi: max T3= 30.78 / min T3= -130.13 kN

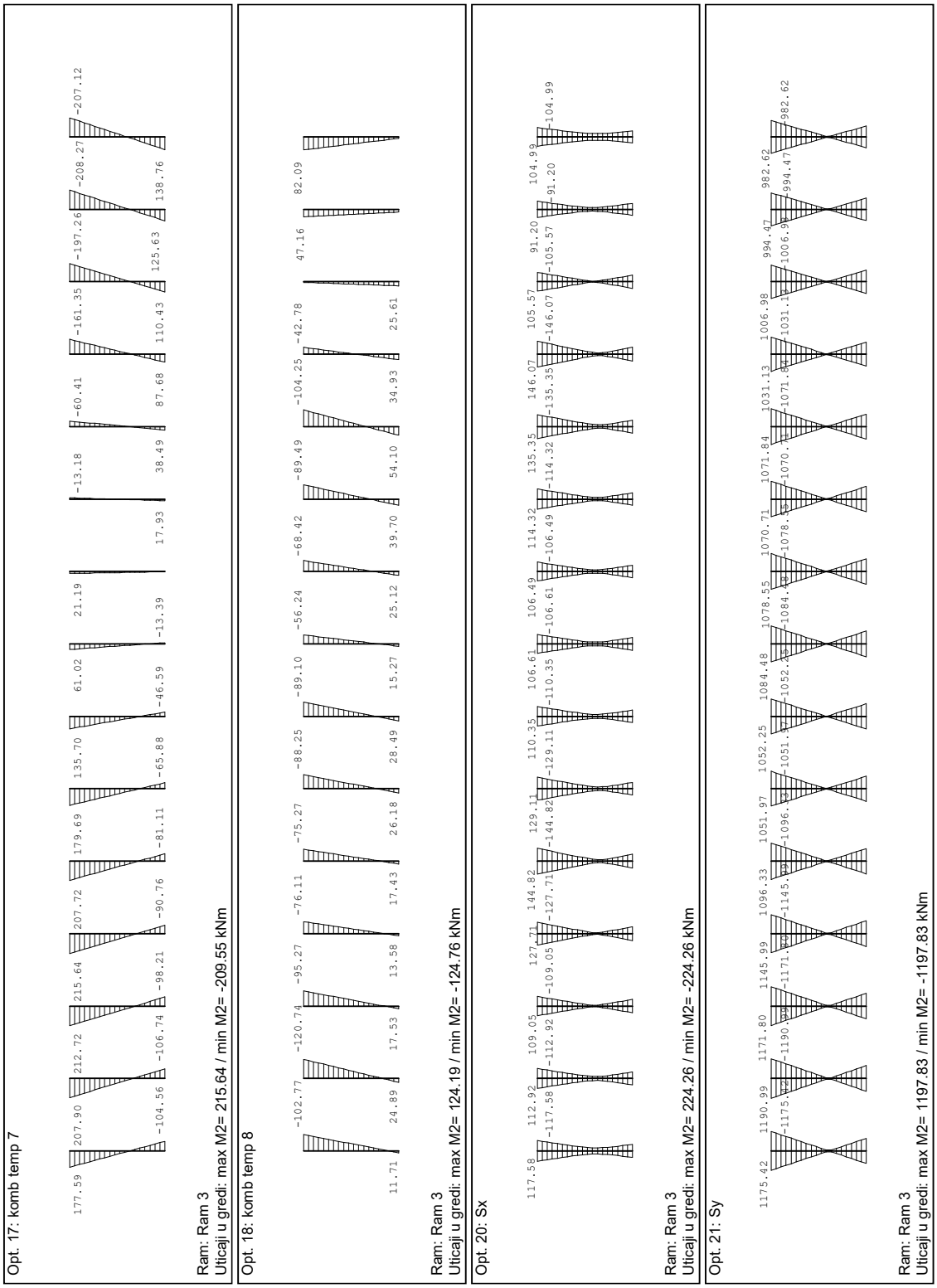
Opt. 17: komb temp 7
-28.94
-32.27
-31.89
-31.42
-29.62
-25.19
-18.70
-7.63
-1.78
3.19
10.14
25.54
31.56
34.25
35.48
Ram: Ram 3
Uticaji u gredi: max T3= 138.15 / min T3= -32.27 kN
Opt. 18: komb temp 8
11.74
14.94
11.57
9.20
9.51
11.74
12.06
7.33
9.59
13.25
16.24
7.97
2.25
-3.14
-7.51
Ram: Ram 3
Uticaji u gredi: max T3= 141.13 / min T3= -8.28 kN
Opt. 20: Sx
18.34
-18.34
18.55
-18.55
18.84
-18.84
21.06
-21.06
22.56
-22.56
20.05
-20.05
17.91
-17.91
17.79
-17.79
17.74
-17.74
18.46
-18.46
21.05
-21.05
23.06
-23.06
18.38
-18.38
15.76
-15.76
15.60
-15.60
Ram: Ram 3
Uticaji u gredi: max T3= 225.69 / min T3= -225.69 kN
Opt. 21: Sy
198.57
201.76
-198.57
199.87
-201.76
197.22
-199.87
191.03
-197.22
185.40
-191.03
186.01
-185.40
190.85
-186.01
189.48
-190.85
187.86
-189.48
187.66
-187.86
180.40
-187.66
175.37
-180.40
172.11
-175.37
168.82
-172.11
-168.82
Ram: Ram 3
Uticaji u gredi: max T3= 379.38 / min T3= -379.38 kN


Opt. 1: sopstvena tezina (g)
329.89 302.64 272.03 246.88 227.19 205.41 177.96 146.54 118.69 90.95 56.37 13.71 -25.78 -53.28 -133.62 -191.15 -239.60
-117.96 -103.02 -88.55 -77.97 -70.84 -63.48 -54.33 -44.21 -37.00 -31.69 38.40 55.14 72.11
Ram: Ram 3
Uticaji u gredi: max M2= 329.89 / min M2= -246.93 kNm
Opt. 2: mrtav teret (Δg)
100.14 91.11 88.24 92.70 105.82 116.32 107.18 81.44 38.05 -6.72 -28.85 -45.64 -60.71 -73.63 -88.87
-38.12 -31.49 -27.86 -27.60 -31.70 -35.62 -32.21 -23.43 -8.10 -8.54 13.12 17.25 21.42 25.73 32.44
Ram: Ram 3
Uticaji u gredi: max M2= 116.32 / min M2= -93.34 kNm
Opt. 3: horizontalan pritisak tla
14.25 10.51 3.91 -3.60 -8.90 -8.86 -7.56 -5.58 -1.05 3.69 10.13 13.90 4.30 -6.35 -15.04
-6.99 -6.19 -4.02 1.19 2.15 3.25 3.61 1.82 -0.03 -3.33 -5.29 3.10 6.32
-1.16
Ram: Ram 3
Uticaji u gredi: max M2= 113.10 / min M2= -97.66 kNm
Opt. 4: skupljanje
24.35 19.97 23.51 32.00 34.30 23.87 11.88 1.74 -2.59 -14.70 -31.99 -52.33 -62.69 -48.08 -35.69 -32.90
-22.81 -16.47 -14.29 -14.89 -13.60 -7.80 8.97 16.93 27.36 34.42 31.15 29.90 33.50
Ram: Ram 3
Uticaji u gredi: max M2= 64.10 / min M2= -62.69 kNm


Opt. 5: LM71
78.04 75.12 77.99 92.69 113.32 125.88 117.59 92.38 52.64 -27.89 -60.50 -86.43 -102.00 -90.23 -82.93 -93.45
-28.67 -26.28 -26.94 -32.78 -40.40 -44.38 -40.93 -31.61 24.80 34.94 40.76 33.39 29.06 33.32
Ram: Ram 3
Uticaji u gredi: max M2= 125.88 / min M2= -102.00 kNm
Opt. 6: SW/2
102.17 97.54 94.05 110.71 135.65 151.99 142.08 112.80 63.52 -24.60 27.42 -64.03 -96.91 -123.39 -111.16 -109.31 -126.42
-33.64 -30.62 -31.48 -38.98 -45.28 -48.81 -44.24 -36.29 39.56 47.05 38.30 34.57 41.03
Ram: Ram 3
Uticaji u gredi: max M2= 151.99 / min M2= -128.55 kNm
Opt. 7: KP
-12.39 -15.06 -19.24 -23.67 -25.62 -23.50 -21.02 -20.24 -20.27 -21.64 -24.47 -25.90 -20.49 -14.40 -9.58
12.02 12.61 13.80 15.16 15.58 14.39 13.25 12.93 12.96 13.54 14.89 16.07 14.40 12.57 11.23
Ram: Ram 3
Uticaji u gredi: max M2= 17.76 / min M2= -25.99 kNm
Opt. 8: voz na nasipu ispred
-2.70 -30.07 17.93 22.10 17.73 8.31 1.37 -5.90 -1.05 1.84 -2.83 4.10 -6.10 6.68 -9.86 9.67 -14.18 11.83 -16.91 12.83 -17.28 13.94 -17.50 15.43 -18.21
28.88 3.53 -15.58 -19.22 -13.55
Ram: Ram 3
Uticaji u gredi: max M2= 61.31 / min M2= -37.57 kNm


Opt. 9: voz na nasipu iza
5.97 6.37 6.90 7.38 7.31 6.60 5.97 5.93 6.10 6.64 7.66 8.03 6.25 4.39 2.99
-4.95 -5.02 -5.11 -5.16 -4.96 -4.43 -3.96 -3.83 -3.88 -4.09 -4.59 -4.91 -4.37 -3.86 -3.55
Ram: Ram 3
Uticaji u gredi: max M2= 8.18 / min M2= -9.57 kNm
Opt. 10: voz ispod
113.55 113.73 111.78 110.08 108.74 107.23 105.45 104.47 102.17 99.88 97.38 92.14 88.69 85.85 82.17
-122.89 -125.86 -123.90 -122.44 -122.05 -121.79 -121.16 -121.94 -119.42 -116.22 -111.90 -101.65 -94.81 -89.53 -83.30
Ram: Ram 3
Uticaji u gredi: max M2= 138.01 / min M2= -125.94 kNm
Opt. 11: komb temp 1
88.46 105.76 123.35 136.30 131.18 102.11 65.38 19.73 17.73 36.23 61.55 94.36 99.50 96.41 92.62
-75.25 -71.02 -67.97 -64.09 -54.58 -37.91 -21.02 -0.45 -18.82 -57.86 -107.45 -166.19 -159.22 -129.50 -96.21
Ram: Ram 3
Uticaji u gredi: max M2= 152.38 / min M2= -167.80 kNm
Opt. 12: komb temp 2
-37.46 19.23 37.42 34.90 10.72 -7.63 -11.21 -19.66 -48.93 -83.42 -120.57 -120.80 -90.96 -49.50 -10.69
-27.69 -29.98 -29.91 -22.22 3.52 8.20 24.29 43.17 65.95 74.49 72.32 65.49 59.02
Ram: Ram 3
Uticaji u gredi: max M2= 157.87 / min M2= -126.96 kNm


Opt. 13: komb temp 3
41.22
30.98
-23.98
33.25
-43.21
33.04
-40.43
24.78
-14.48
9.40
9.14
-2.93
19.66
-8.46
51.19
-25.69
88.13
-45.82
128.17
-70.20
130.37
-80.11
99.30
-78.05
55.47
-70.88
14.25
-64.07
Ram: Ram 3
Uticaji u gredi: max M2= 135.99 / min M2= -168.21 kNm
Opt. 14: komb temp 4
79.00
74.31
-91.23
71.23
-109.11
67.23
-128.10
57.14
-142.09
39.42
-136.72
21.61
-105.87
0.19
-67.19
-19.13
-38.87
-65.80
-99.99
-105.23
-101.81
-97.68
99.77
135.46
167.56
175.75
115.05
62.57
Ram: Ram 3
Uticaji u gredi: max M2= 177.00 / min M2= -162.72 kNm
Opt. 15: komb temp 5
100.69
118.22
-8.89
91.71
-22.42
71.76
-15.08
71.12
-11.23
85.43
-15.51
87.74
-25.04
56.24
-28.06
70.11
-15.46
93.02
-26.17
109.95
-41.68
49.95
-57.29
2.55
-39.15
-29.91
-42.69
-79.42
Ram: Ram 3
Uticaji u gredi: max M2= 122.64 / min M2= -131.94 kNm
Opt. 16: komb temp 6
99.06
-167.21
101.39
-198.69
93.44
-205.77
86.43
-210.74
76.94
-203.99
61.47
-175.69
42.06
-131.09
9.26
-56.29
-15.91
20.00
72.46
-21.84
179.64
-44.71
197.59
-95.92
185.88
-107.55
164.93
-108.93
-108.66
Ram: Ram 3
Uticaji u gredi: max M2= 197.59 / min M2= -210.74 kNm

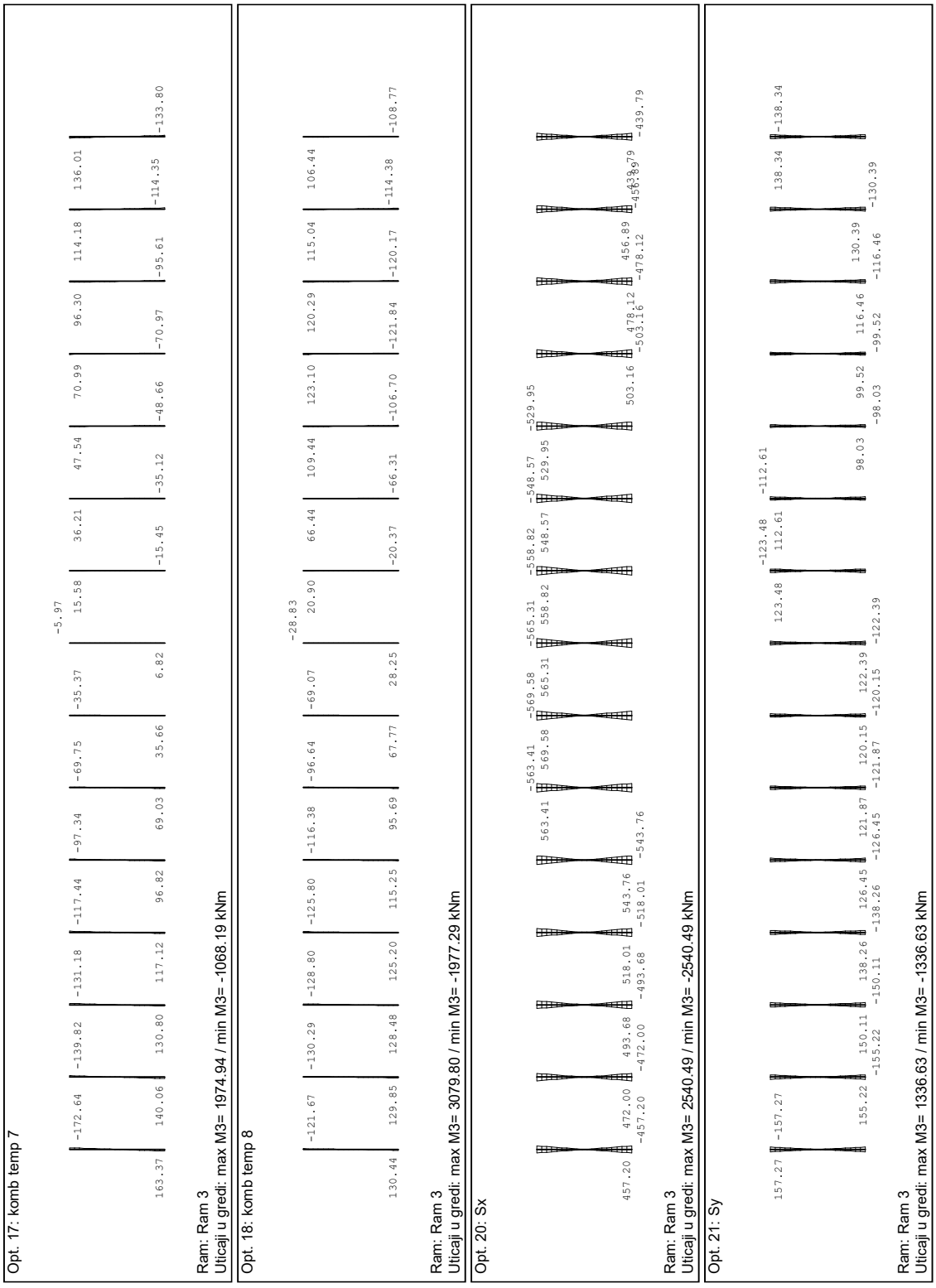

Opt. 17: komb temp 7
Ram: Ram 3
Uticaji u gredi: max M2= 215.64 / min M2= -209.55 kNm
Opt. 18: komb temp 8
Ram: Ram 3
Uticaji u gredi: max M2= 124.19 / min M2= -124.76 kNm
Opt. 20: Sx
Ram: Ram 3
Uticaji u gredi: max M2= 224.26 / min M2= -224.26 kNm
Opt. 21: Sy
Ram: Ram 3
Uticaji u gredi: max M2= 1197.83 / min M2= -1197.83 kNm

Opt. 1: sopstvena tezina (g)
52.83 39.01 24.50 16.65 16.43 21.33 27.93 22.85 -31.48 -68.24 -86.56 -72.10 -65.17 -70.83
-49.22 -38.39 -24.62 -16.73 -16.38 -21.23 -26.74 -21.29 31.73 65.99 82.46 72.09 65.60 69.74
0.40
Ram: Ram 3
Uticaji u gredi: max M3= 2495.80 / min M3= -1043.85 kNm
Opt. 2: mrtav teret (Δg)
10.59 12.13 19.77 31.58 42.51 44.71 34.61 11.51 -15.73 -42.34 -62.28 -68.77 -56.06 -42.14 -34.47
-10.22 -12.12 -19.56 -30.91 -41.14 -43.10 -33.05 -11.12 41.52 60.65 66.29 55.33 42.04 34.52
15.56
Ram: Ram 3
Uticaji u gredi: max M3= 2007.63 / min M3= -1059.96 kNm
Opt. 3: horizontalan pritisak tla
-13.06 -12.96 -12.24 -10.80 -8.31 -5.72 -3.41 -1.21 1.74 5.28 11.92 16.42 18.52 19.10
12.94 12.89 12.19 10.71 8.36 5.86 3.51 1.16 -0.07 -1.89 -5.47 -11.78 -16.29 -18.48 -19.00
Ram: Ram 3
Uticaji u gredi: max M3= 118.20 / min M3= -176.99 kNm
Opt. 4: skupljanje
15.90 6.51 -8.21 -19.75 -26.81 -27.46 -22.41 -13.92 -5.43 0.63 2.05 -4.48 -15.25 -28.77 -41.98
-18.68 -7.36 .61 19.21 26.04 26.72 21.93 14.03 5.74 -0.08 5.06 15.74 29.43 43.55
-1.15
Ram: Ram 3
Uticaji u gredi: max M3= 1820.51 / min M3= -1227.28 kNm

Opt. 5: LM71
22.69 25.08 32.09 44.75 62.47 76.01 82.12 82.05 78.44 -82.69 -88.34 -86.25 -73.92 -56.80 -43.99 -36.97
-22.90 -25.18 -32.21 -44.54 -61.17 -73.74 -79.14 -78.30 83.81 82.45 71.87 56.19 43.94 37.23
Ram: Ram 3
Uticaji u gredi: max M3= 3346.60 / min M3= -1644.21 kNm
Opt. 6: SW/2
22.33 25.37 34.49 51.31 74.15 88.01 85.53 71.89 74.17 -79.86 -105.24 -109.92 -93.30 -66.62 -46.30 -37.14
-22.35 -25.38 -34.32 -50.96 -71.97 -84.21 -80.89 -66.86 98.53 104.24 90.50 66.57 46.31 37.35
Ram: Ram 3
Uticaji u gredi: max M3= 4046.04 / min M3= -2166.63 kNm
Opt. 7: KP
31.69 33.10 34.83 36.75 38.87 40.29 40.79 40.68 40.49 40.26 39.41 37.27 35.02 33.19 31.62
-32.05 -33.20 -34.90 -36.82 -38.83 -40.21 -40.73 -40.66 -40.49 -40.20 -39.29 -37.33 -35.13 -33.28 -31.83
Ram: Ram 3
Uticaji u gredi: max M3= 180.83 / min M3= -171.56 kNm
Opt. 8: voz na nasipu ispred
40.66 39.91 33.71 27.10 23.51 22.63 23.22 23.73 24.05 24.40 24.53 23.90 22.79 21.73 20.71
-40.79 -39.94 -33.84 -27.00 -23.37 -22.70 -23.21 -23.73 -24.06 -24.39 -24.48 -23.88 -22.82 -21.76 -20.82
Ram: Ram 3
Uticaji u gredi: max M3= 93.04 / min M3= -139.09 kNm

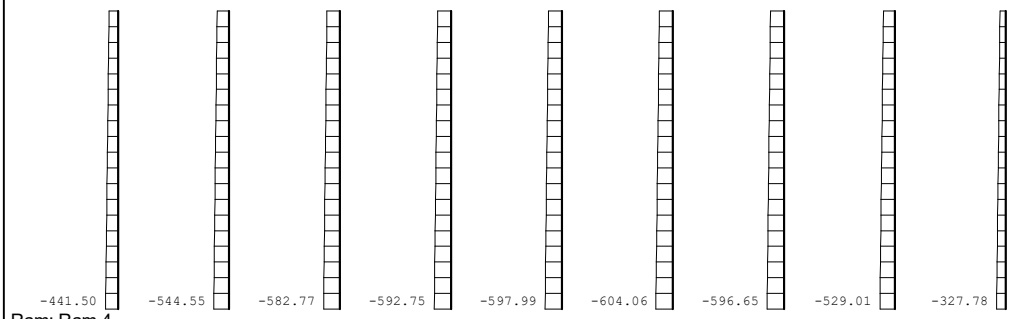
Opt. 9: voz na nasipu iza
-12.22 -12.68 -13.18 -13.65 -14.03 -14.17 -14.03 -13.68 -13.44 -13.25 -12.89 -12.11 -11.33 -10.72 -10.21
12.32 12.71 13.20 13.66 14.03 14.16 14.02 13.67 13.44 13.24 12.86 12.12 11.36 10.75 10.27
Ram: Ram 3
Uticaji u gredi: max M3= 47.43 / min M3= -56.29 kNm
Opt. 10: voz ispod
1.49 2.00 1.95 1.86 2.16 3.16 4.37 4.57 4.13 3.77 3.43 2.74 2.32 2.08 1.72
-1.63 -1.94 -1.92 -1.88 -2.24 -3.20 -4.28 -4.52 -4.14 -3.77 -3.39 -2.77 -2.35 -2.09 -1.80
Ram: Ram 3
Uticaji u gredi: max M3= 43.92 / min M3= -65.08 kNm
Opt. 11: komb temp 1
-19.53
-207.56 -184.21 -176.22 -163.09 -141.35 -108.11 -65.02 23.77 63.65 92.82 112.92 127.59 137.95 152.44
204.08 184.21 175.75 162.54 140.37 107.04 64.61 19.97 -23.39 -62.58 -92.08 -112.44 -127.26 -137.97 -151.70
Ram: Ram 3
Uticaji u gredi: max M3= 2891.27 / min M3= -1408.46 kNm
Opt. 12: komb temp 2
-27.40
-188.70 -179.85 -174.36 -165.02 -147.10 -116.73 -76.28 25.47 74.02 114.90 134.22 141.23 144.37 148.06
191.54 179.60 173.91 164.37 145.90 115.59 75.32 27.33 -24.96 -73.32 -112.95 -133.24 -140.97 -144.01 -148.92
Ram: Ram 3
Uticaji u gredi: max M3= 3244.36 / min M3= -1397.06 kNm

Opt. 13: komb temp 3
201.91 191.98 186.04 175.95 156.71 124.23 80.99 28.96 -27.11 -78.61 -121.82 -142.45 -150.19 -153.78 -158.08
-204.73 -191.73 -185.56 -175.27 -155.44 -123.01 -79.99 26.57 -28.91 77.85 119.79 141.43 149.91 153.41 158.94
Ram: Ram 3
Uticaji u gredi: max M3= 1490.58 / min M3= -3440.20 kNm
Opt. 14: komb temp 4
220.77 196.34 187.91 174.02 150.97 115.60 69.73 21.10 -25.41 -68.24 -99.75 -121.16 -136.55 -147.36 -162.45
-217.27 -196.33 -187.41 -173.44 -149.92 -114.46 -69.28 -21.55 25.00 67.11 98.92 120.63 136.20 147.37 161.72
Ram: Ram 3
Uticaji u gredi: max M3= 1501.97 / min M3= -3091.54 kNm
Opt. 15: komb temp 5
131.57 139.40 137.57 134.00 123.59 102.26 72.61 30.00 -22.13 -69.89 -114.63 -129.28 -127.01 -122.10 -113.95
-140.33 -138.95 -137.23 -133.38 -122.41 -101.26 -71.27 -29.44 21.58 69.70 111.83 127.98 126.88 121.43 116.28
Ram: Ram 3
Uticaji u gredi: max M3= 1984.79 / min M3= -3226.67 kNm
Opt. 16: komb temp 6
185.44 151.85 142.90 128.48 107.17 77.62 40.43 7.54 -17.26 -40.25 -51.55 -68.43 -88.04 -103.75 -126.45
-176.17 -152.10 -142.50 -128.15 -106.61 -76.84 -40.68 17.10 -8.40 39.01 52.20 68.56 87.70 104.16 124.21
Ram: Ram 3
Uticaji u gredi: max M3= 1138.49 / min M3= -2080.92 kNm



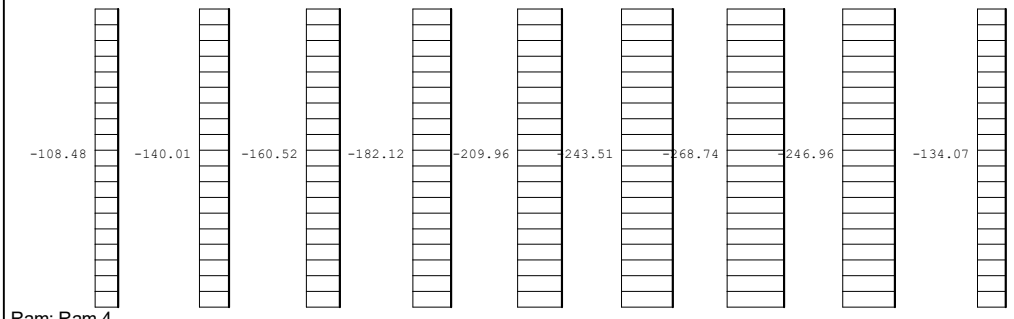
Приказани су утицаји у сваком другом стубу у раму 3, почевши од стуба који је меродаван за димензионисање.

Opt. 1: sopstvena tezina (g)



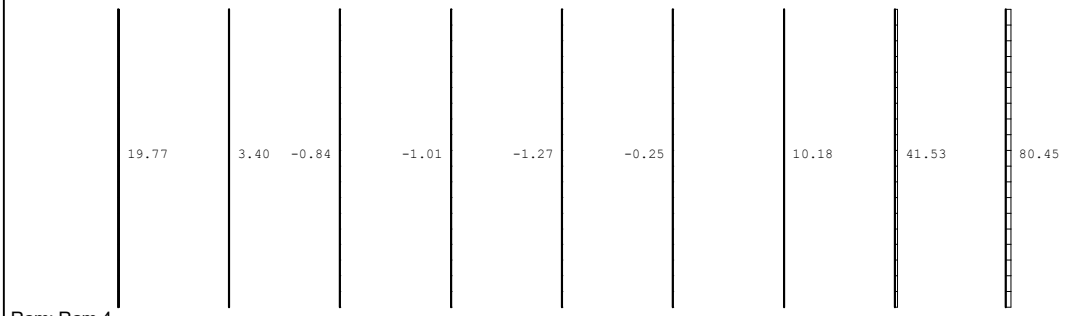
Ram: Ram 4
Uticaji u gredi: max N1= 226.12 / min N1= -2152.74 kN

Opt. 2: mrtav teret (Δg)



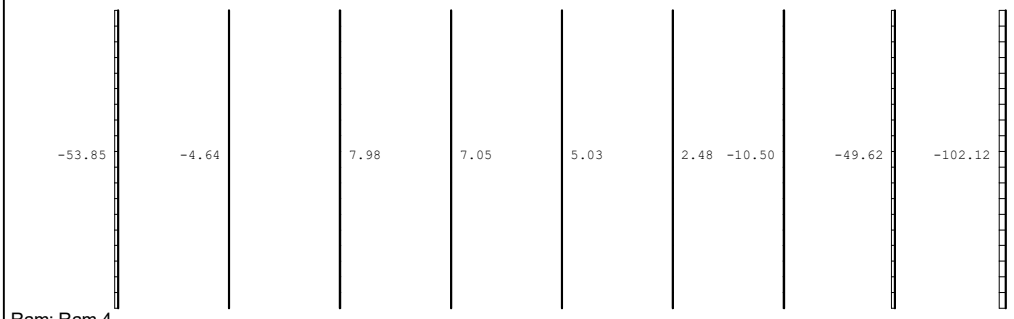
Ram: Ram 4
Uticaji u gredi: max N1= 218.74 / min N1= -288.91 kN

Opt. 3: horizontalan pritisak tla



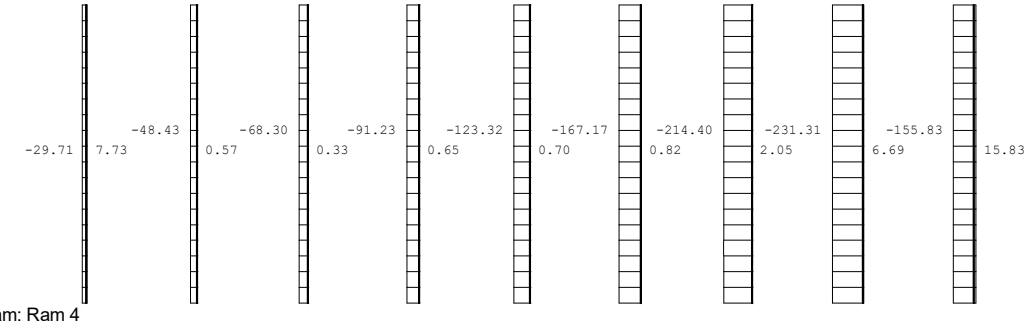
Ram: Ram 4
Uticaji u gredi: max N1= 80.45 / min N1= -972.54 kN

Opt. 4: skupljanje



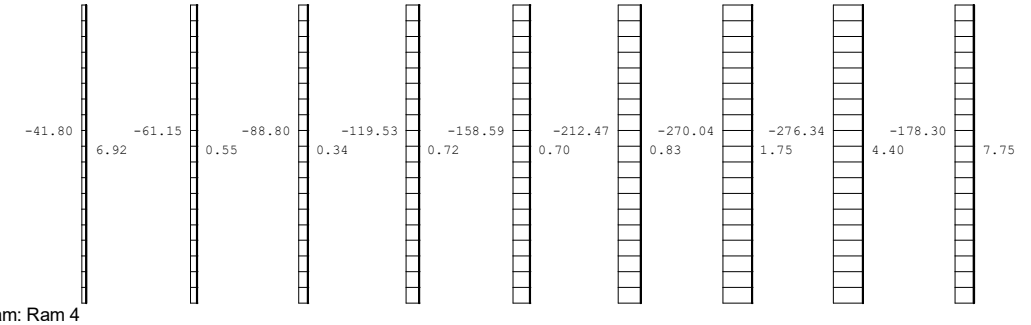
Ram: Ram 4
Uticaji u gredi: max N1= 922.15 / min N1= -166.13 kN

Opt. 5: LM71



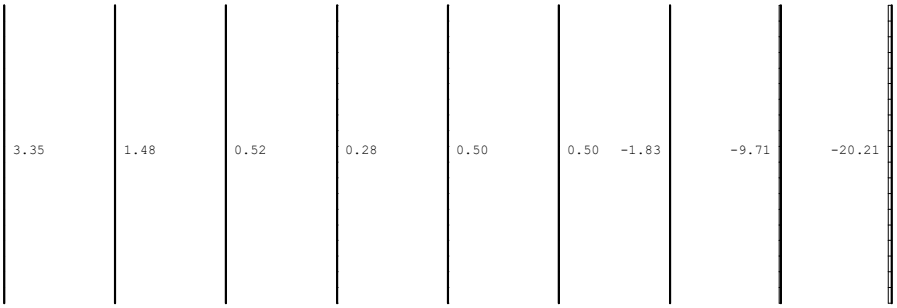
Ram: Ram 4
Uticaji u gredi: max N1= 463.86 / min N1= -312.22 kN

Opt. 6: SW/2



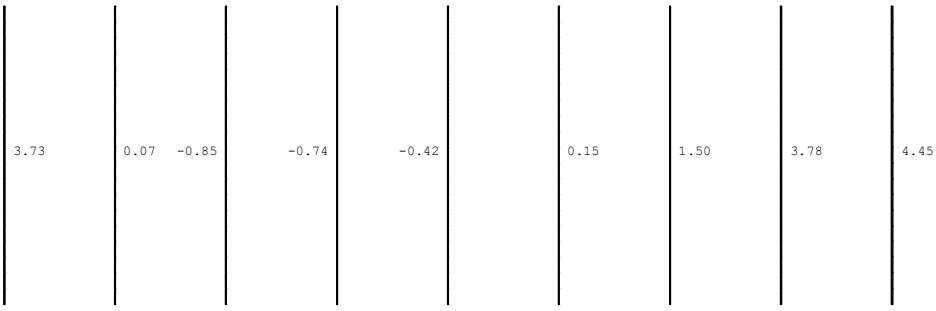
Ram: Ram 4
Uticaji u gredi: max N1= 570.70 / min N1= -399.50 kN

Opt. 7: KP



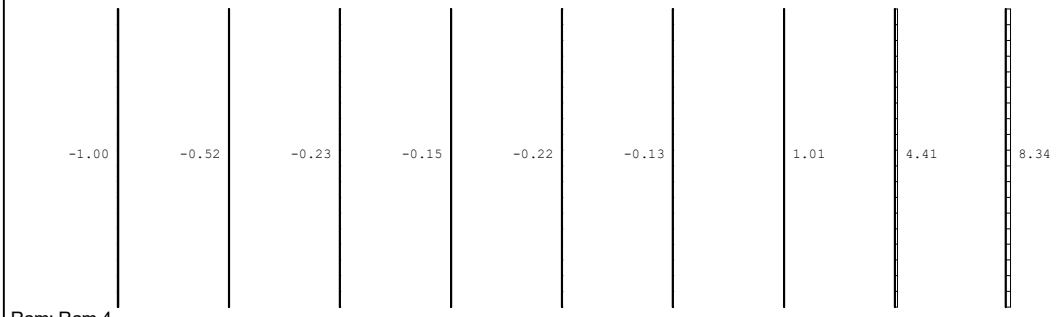
Ram: Ram 4
Uticaji u gredi: max N1= 202.13 / min N1= -331.21 kN

Opt. 8: voz na nasipu ispred



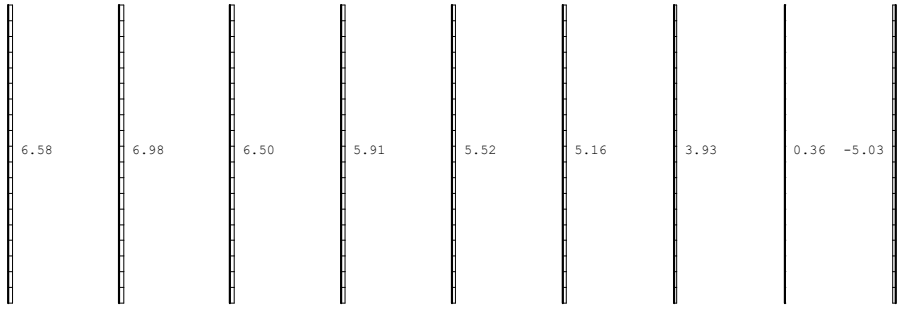
Ram: Ram 4
Uticaji u gredi: max N1= 14.11 / min N1= -237.01 kN

Opt. 9: voz na nasipu iza



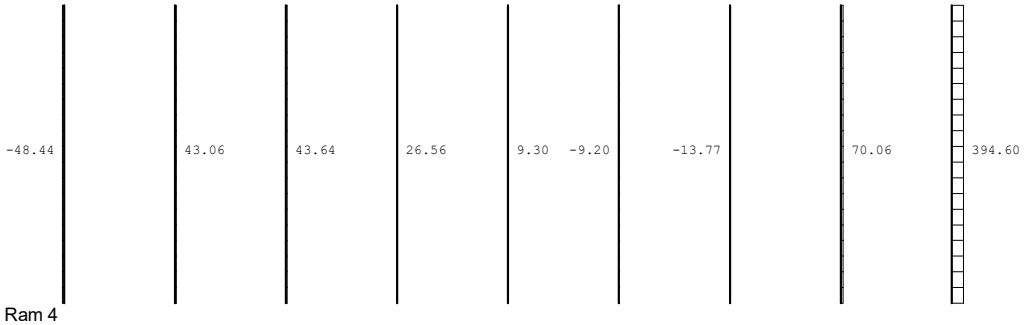
Ram: Ram 4
Uticaji u gredi: max N1= 105.35 / min N1= -107.90 kN

Opt. 10: voz ispod



Ram: Ram 4
Uticaji u gredi: max N1= 91.51 / min N1= -57.67 kN

Opt. 11: komb temp 1

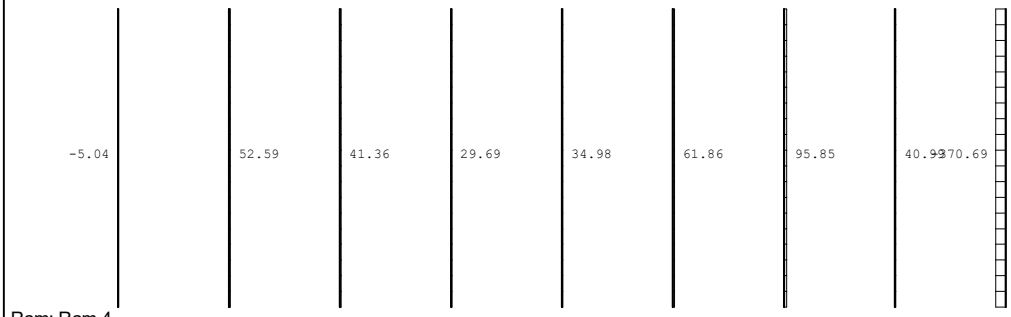


Ram: Ram 4
Uticaji u gredi: max N1= 2071.18 / min N1= -849.11 kN

Opt. 12: komb temp 2

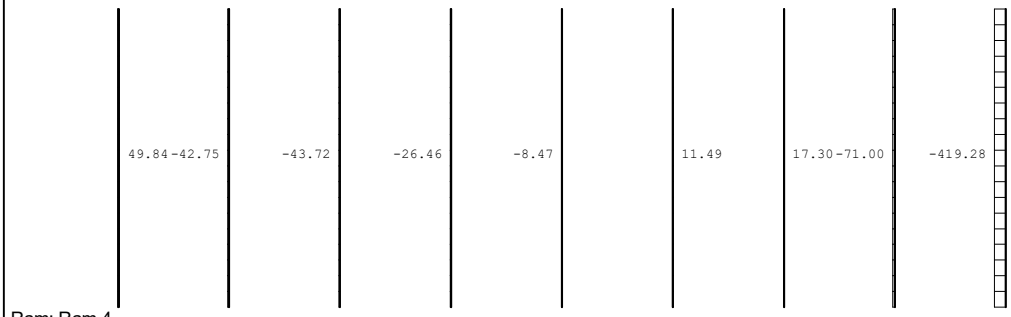
Ram: Ram 4
Uticaji u gredi: max N1= 2129.48 / min N1= -862.20 kN

Opt. 13: komb temp 3



Ram: Ram 4
Uticaji u gredi: max N1= 919.25 / min N1= -2269.50 kN

Opt. 14: komb temp 4



Ram: Ram 4
Uticaji u gredi: max N1= 906.15 / min N1= -2211.20 kN

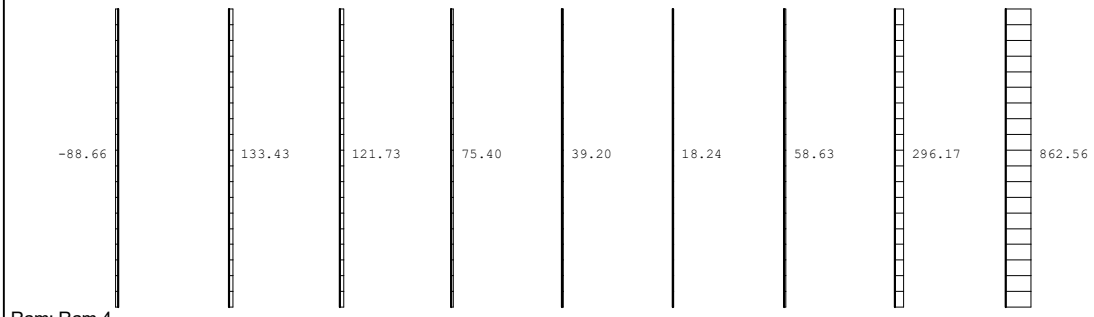
Opt. 15: komb temp 5

Ram: Ram 4
Uticaji u gredi: max N1= 703.23 / min N1= -1763.55 kN

Opt. 16: komb temp 6

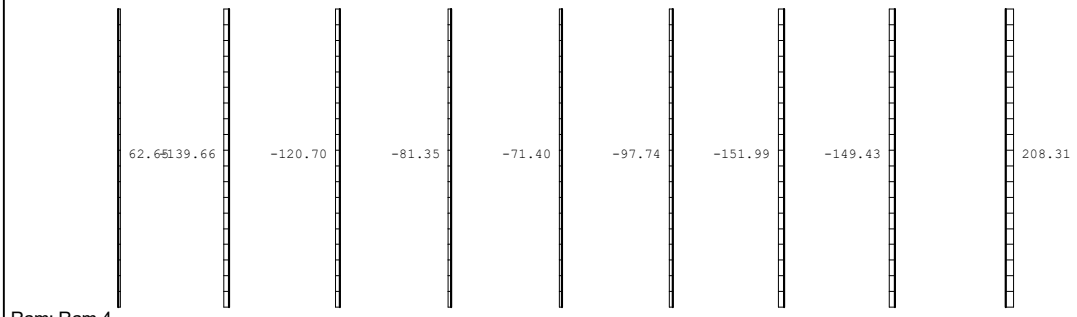
Ram: Ram 4
Uticaji u gredi: max N1= 665.81 / min N1= -1596.98 kN

Opt. 17: komb temp 7



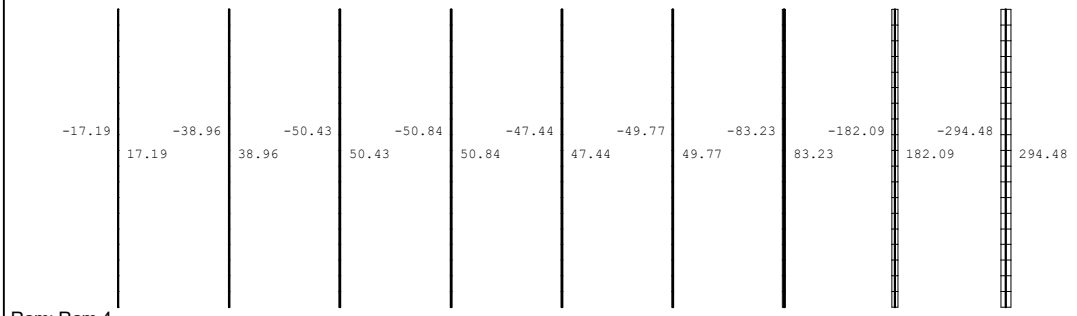
Ram: Ram 4
Uticaji u gredi: max N1= 2088.73 / min N1= -805.71 kN

Opt. 18: komb temp 8



Ram: Ram 4
Uticaji u gredi: max N1= 1658.53 / min N1= -660.45 kN

Opt. 20: Sx



Ram: Ram 4
Uticaji u gredi: max N1= 3646.70 / min N1= -3646.70 kN

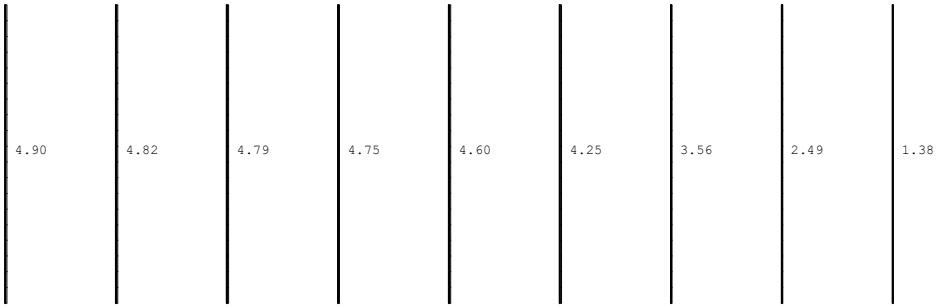
Opt. 21: Sy

Ram: Ram 4
Uticaji u gredi: max N1= 3591.18 / min N1= -3591.18 kN

Opt. 1: sopstvena tezina (g)

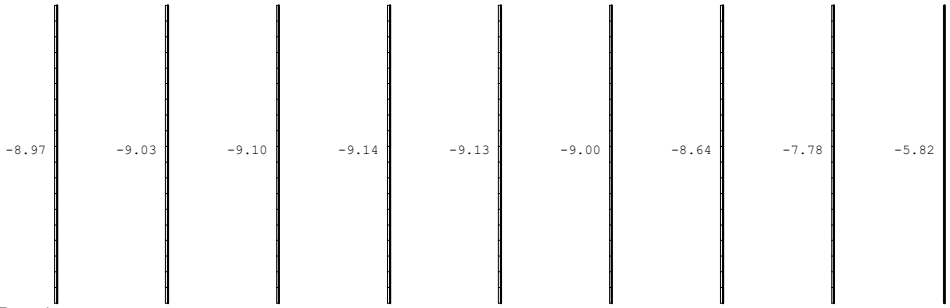
Ram: Ram 4
Uticaji u gredi: max T2= 495.69 / min T2= -1354.41 kN

Opt. 2: mrtav teret (Δg)



Ram: Ram 4
Uticaji u gredi: max T2= 107.24 / min T2= -182.48 kN

Opt. 3: horizontalan pritisak tla

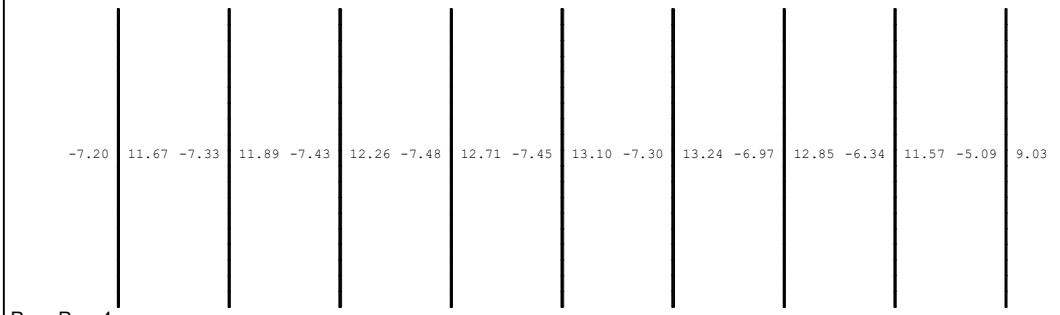


Ram: Ram 4
Uticaji u gredi: max T2= 108.64 / min T2= -217.17 kN

Opt. 4: skupljanje

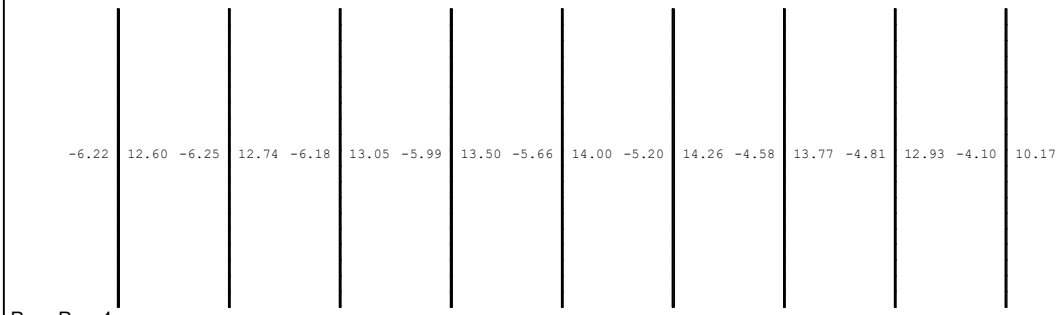
Ram: Ram 4
Uticaji u gredi: max T2= 427.73 / min T2= -488.32 kN

Opt. 5: LM71



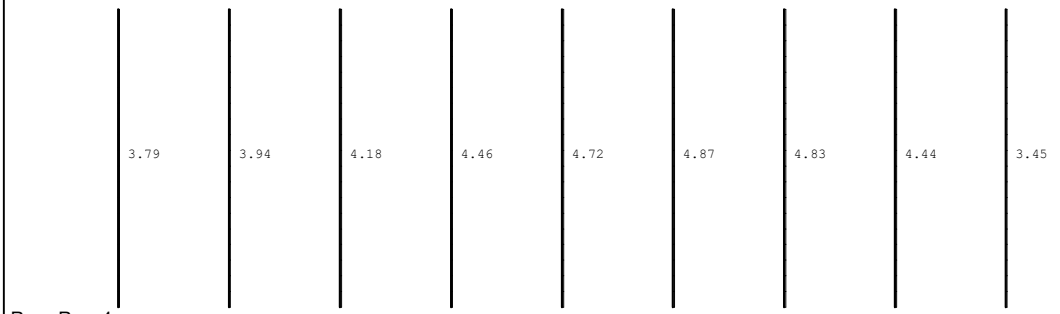
Ram: Ram 4
Uticaji u gredi: max T2= 299.53 / min T2= -498.53 kN

Opt. 6: SW/2



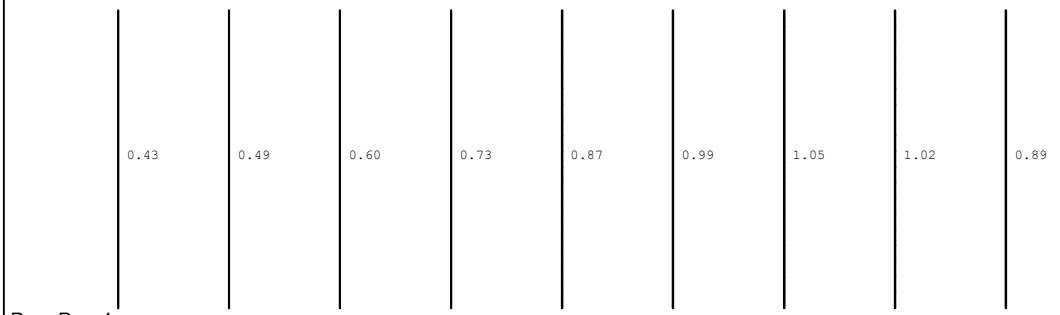
Ram: Ram 4
Uticaji u gredi: max T2= 326.86 / min T2= -612.98 kN

Opt. 7: KP



Ram: Ram 4
Uticaji u gredi: max T2= 109.81 / min T2= -169.35 kN

Opt. 8: voz na nasipu ispred

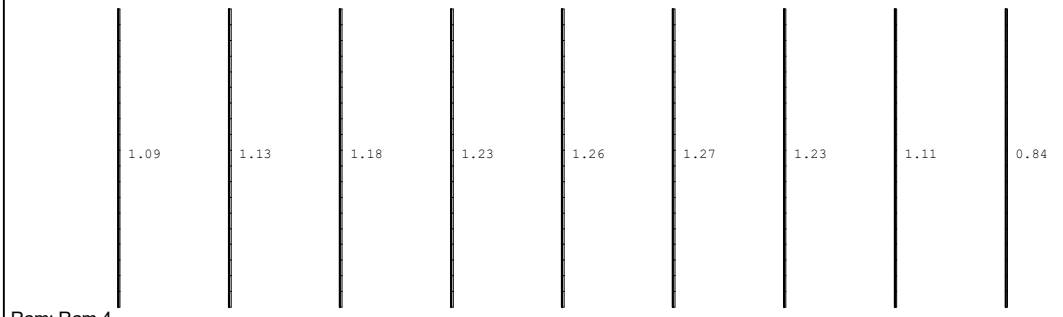


Ram: Ram 4
Uticaji u gredi: max T2= 26.96 / min T2= -78.08 kN

Opt. 9: voz na nasipu iza

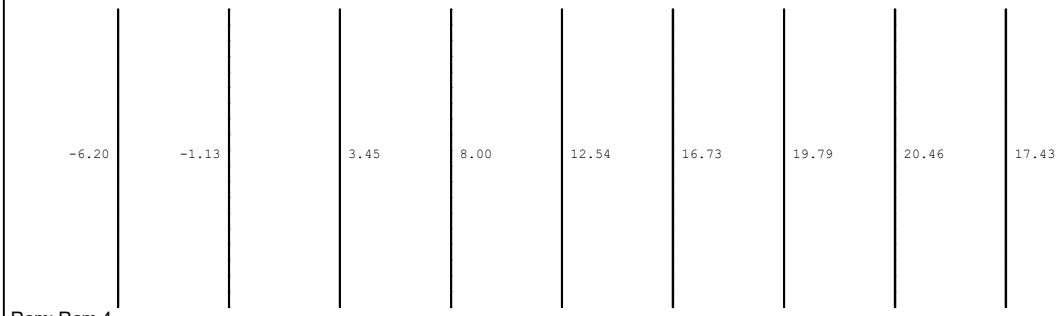
Ram: Ram 4
Uticaji u gredi: max T2= 51.37 / min T2= -35.12 kN

Opt. 10: voz ispod



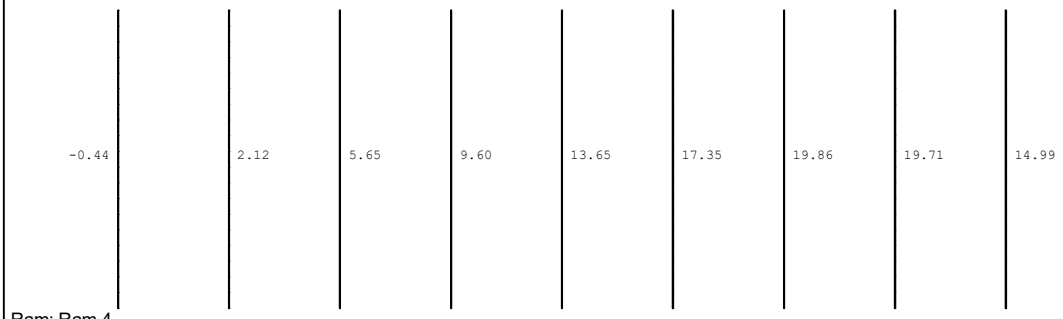
Ram: Ram 4
Uticaji u gredi: max T2= 35.45 / min T2= -27.85 kN

Opt. 11: komb temp 1



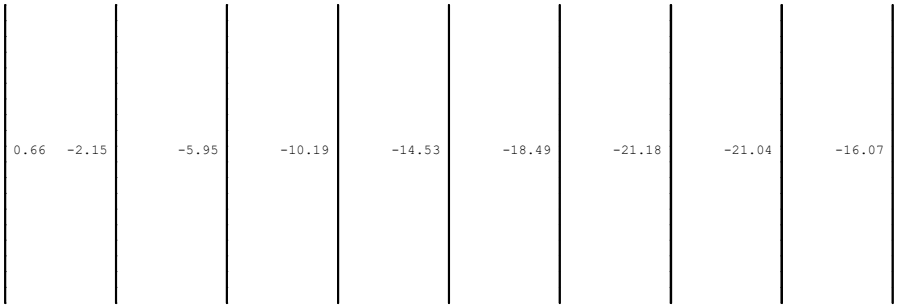
Ram: Ram 4
Uticaji u gredi: max T2= 540.94 / min T2= -1707.16 kN

Opt. 12: komb temp 2



Ram: Ram 4
Uticaji u gredi: max T2= 550.95 / min T2= -1533.41 kN

Opt. 13: komb temp 3

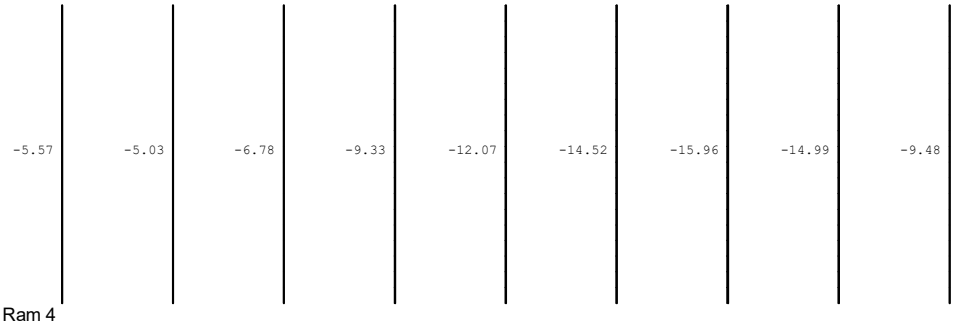


Ram: Ram 4
Uticaji u gredi: max T2= 1641.43 / min T2= -587.34 kN

Opt. 14: komb temp 4

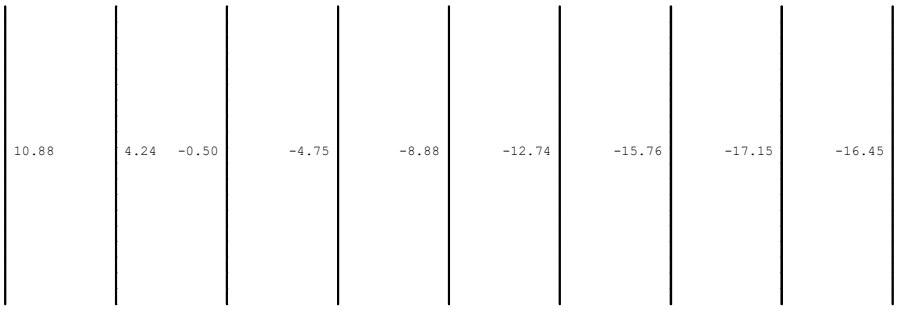
Ram: Ram 4
Uticaji u gredi: max T2= 1815.18 / min T2= -577.33 kN

Opt. 15: komb temp 5



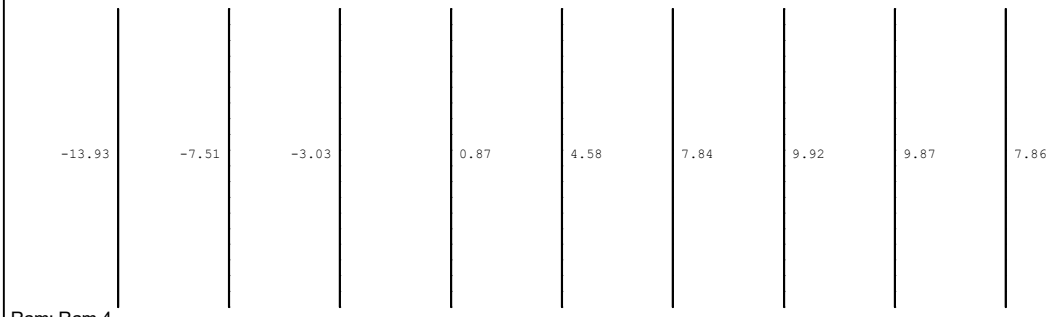
Ram: Ram 4
Uticaji u gredi: max T2= 1048.02 / min T2= -451.05 kN

Opt. 16: komb temp 6



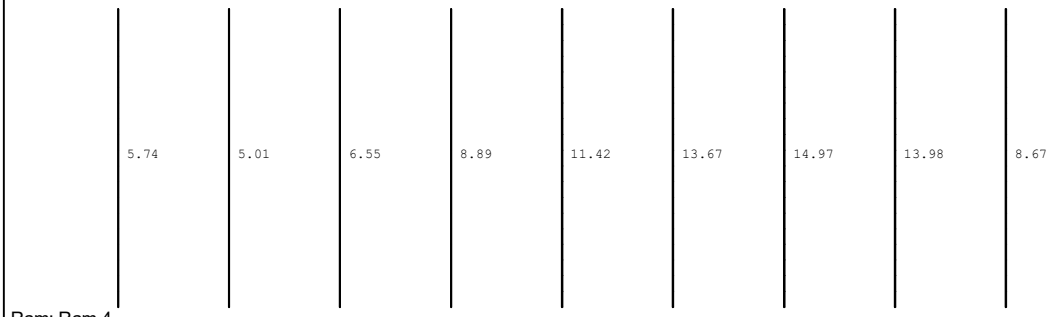
Ram: Ram 4
Uticaji u gredi: max T2= 1544.44 / min T2= -422.45 kN

Opt. 17: komb temp 7



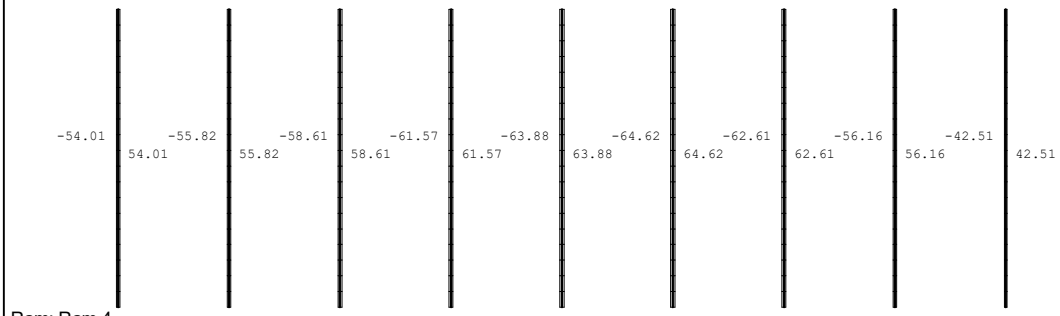
Ram: Ram 4
Uticaji u gredi: max T2= 2991.73 / min T2= -2020.03 kN

Opt. 18: komb temp 8



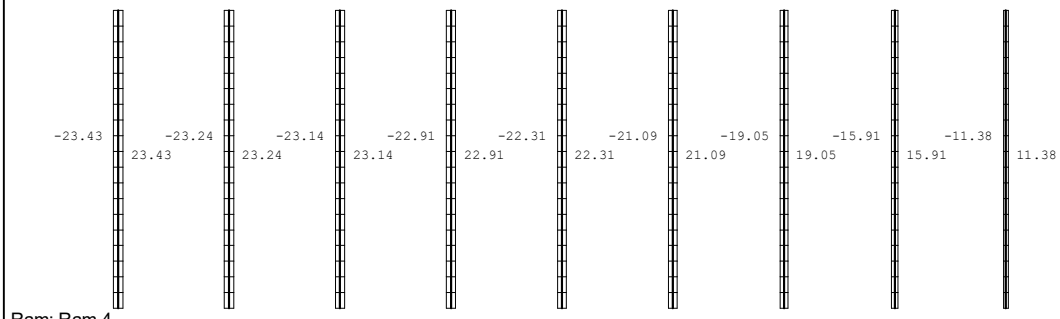
Ram: Ram 4
Uticaji u gredi: max T2= 423.76 / min T2= -967.01 kN

Opt. 20: Sx



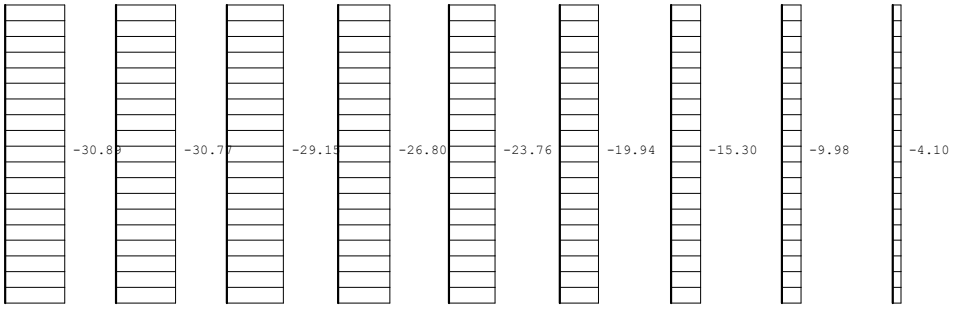
Ram: Ram 4
Uticaji u gredi: max T2= 1874.06 / min T2= -1874.06 kN

Opt. 21: Sy



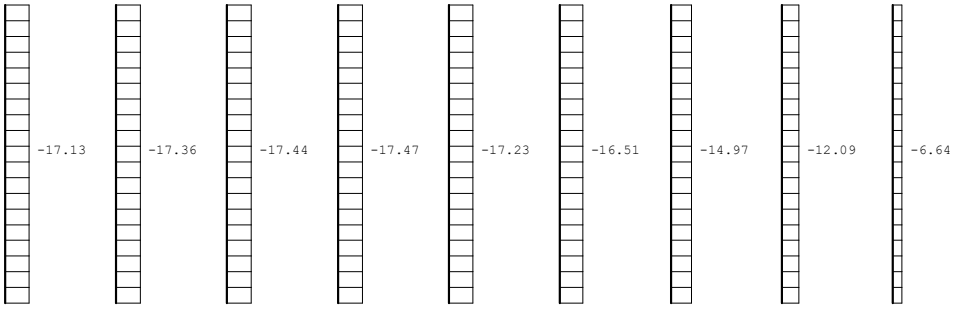
Ram: Ram 4
Uticaji u gredi: max T2= 298.97 / min T2= -298.97 kN

Opt. 1: sopstvena tezina (g)



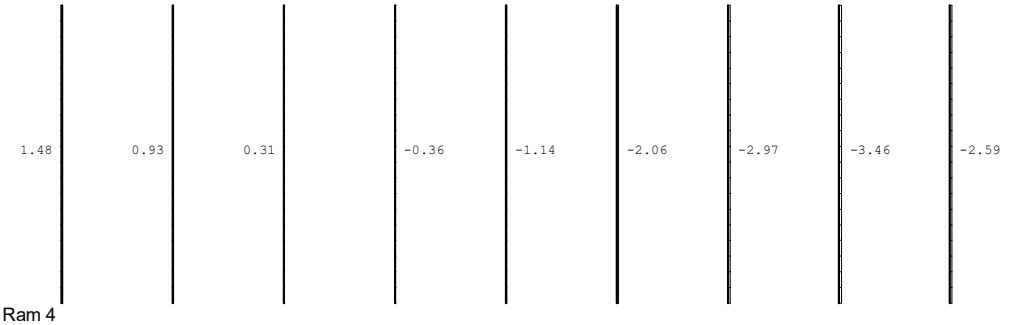
Ram: Ram 4
Uticaji u gredi: max T3= 28.41 / min T3= -31.38 kN

Opt. 2: mrtav teret (Δg)



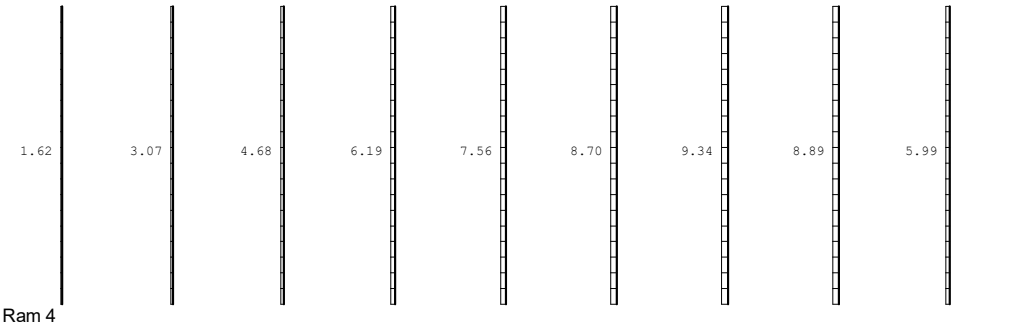
Ram: Ram 4
Uticaji u gredi: max T3= 43.75 / min T3= -37.24 kN

Opt. 3: horizontalan pritisak tla



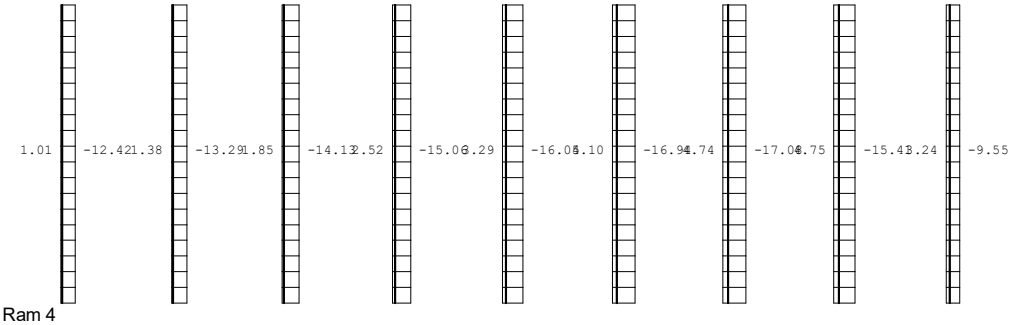
Ram: Ram 4
Uticaji u gredi: max T3= 57.02 / min T3= -78.77 kN

Opt. 4: skupljanje



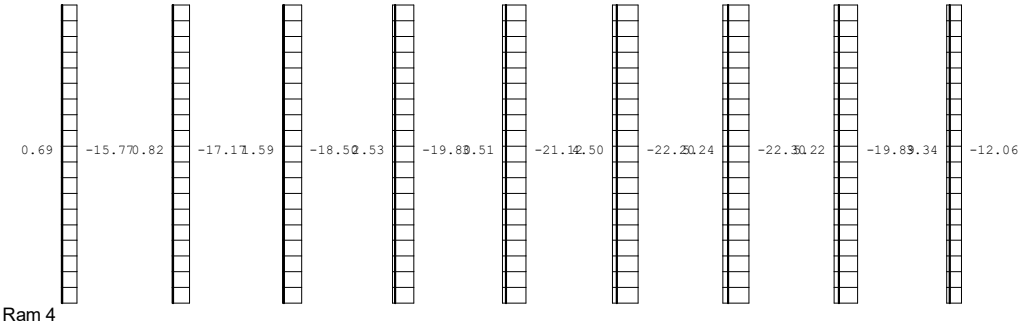
Ram: Ram 4
Uticaji u gredi: max T3= 87.80 / min T3= -25.57 kN

Opt. 5: LM71



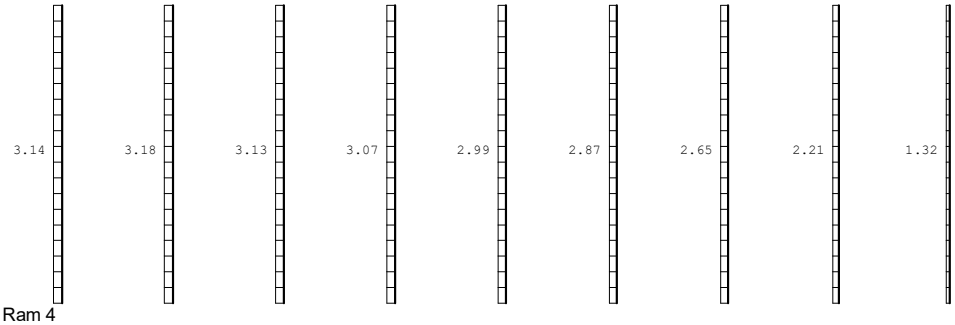
Ram: Ram 4
Uticaji u gredi: max T3= 57.50 / min T3= -38.21 kN

Opt. 6: SW/2



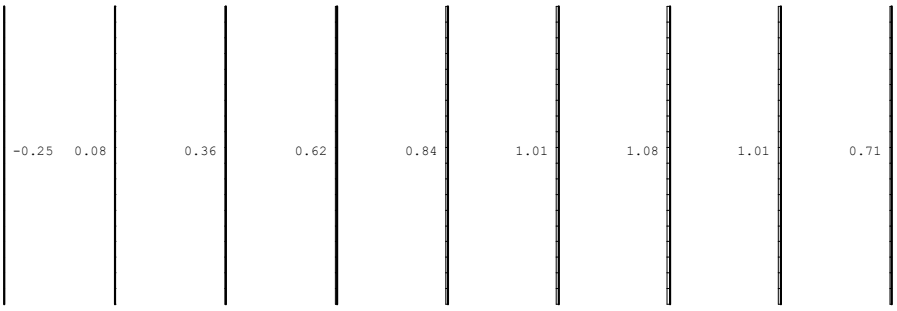
Ram: Ram 4
Uticaji u gredi: max T3= 63.90 / min T3= -46.00 kN

Opt. 7: KP



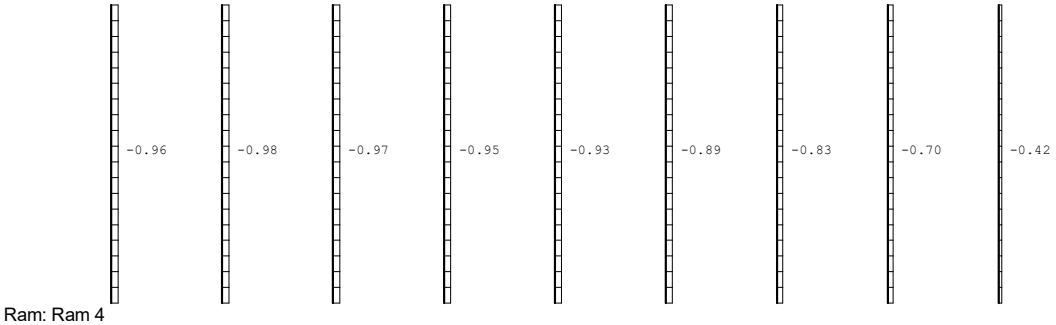
Ram: Ram 4
Uticaji u gredi: max T3= 20.42 / min T3= -22.70 kN

Opt. 8: voz na nasipu ispred



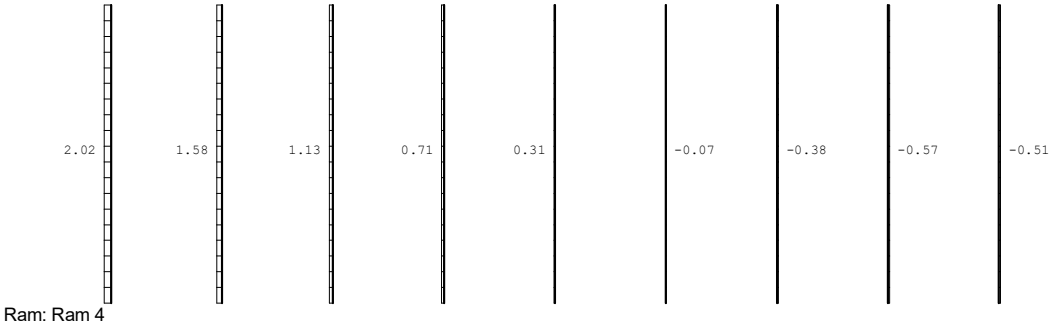
Ram: Ram 4
Uticaji u gredi: max T3= 23.00 / min T3= -17.94 kN

Opt. 9: voz na nasipu iza



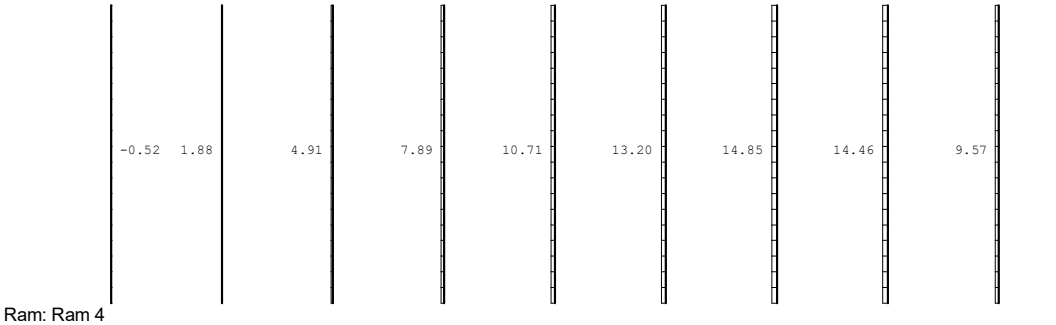
Ram: Ram 4
Uticaji u gredi: max T3= 6.41 / min T3= -8.46 kN

Opt. 10: voz ispod



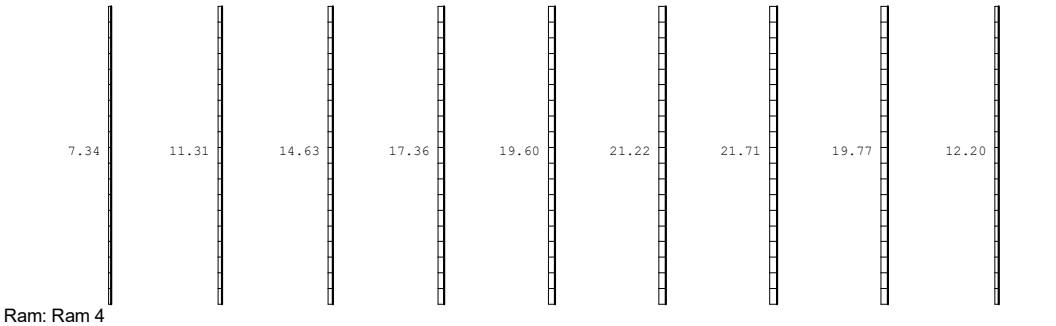
Ram: Ram 4
Uticaji u gredi: max T3= 12.18 / min T3= -18.01 kN

Opt. 11: komb temp 1



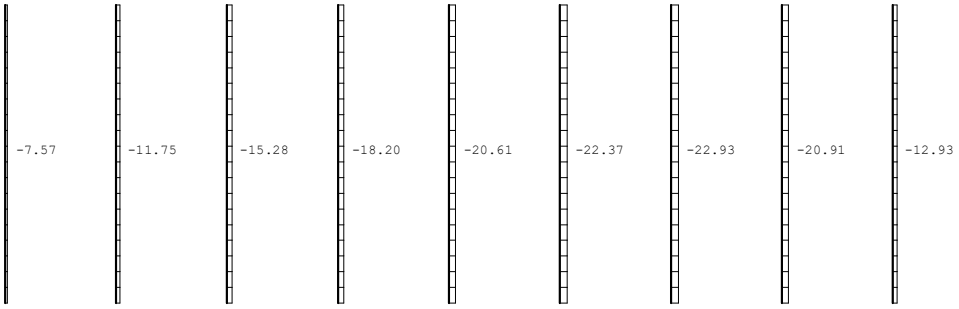
Ram: Ram 4
Uticaji u gredi: max T3= 172.68 / min T3= -69.00 kN

Opt. 12: komb temp 2



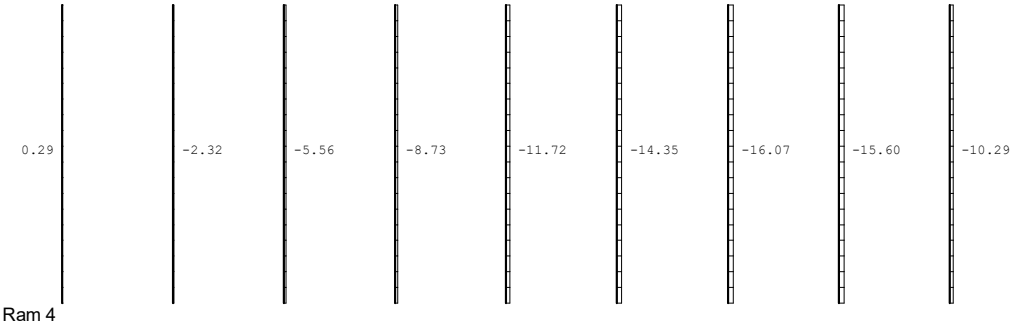
Ram: Ram 4
Uticaji u gredi: max T3= 178.05 / min T3= -80.31 kN

Opt. 13: komb temp 3



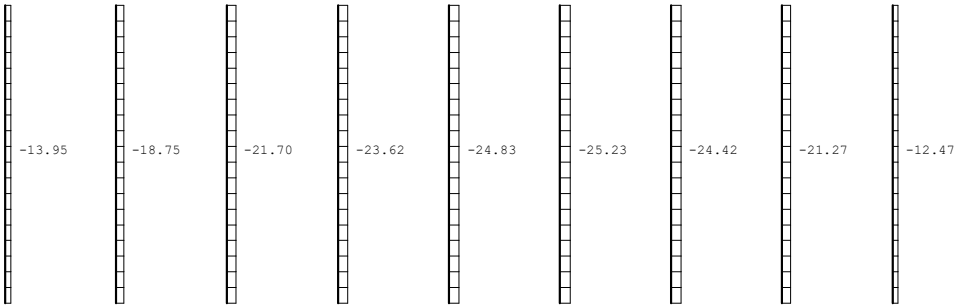
Ram: Ram 4
Uticaji u gredi: max T3= 85.28 / min T3= -189.74 kN

Opt. 14: komb temp 4



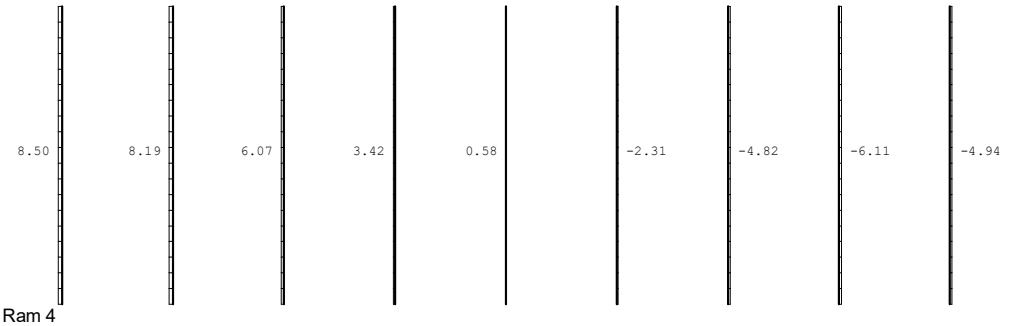
Ram: Ram 4
Uticaji u gredi: max T3= 73.98 / min T3= -184.38 kN

Opt. 15: komb temp 5



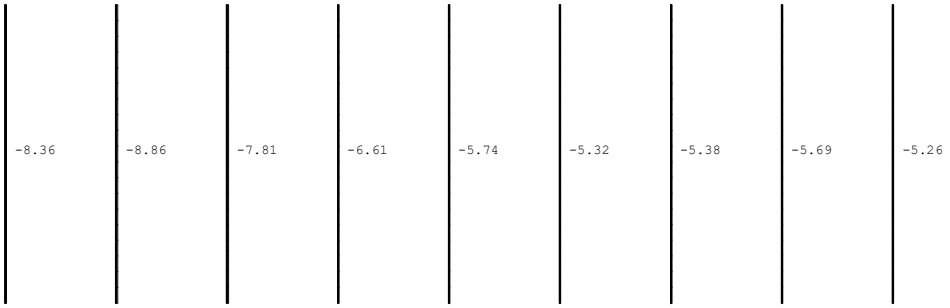
Ram: Ram 4
Uticaji u gredi: max T3= 94.94 / min T3= -147.96 kN

Opt. 16: komb temp 6



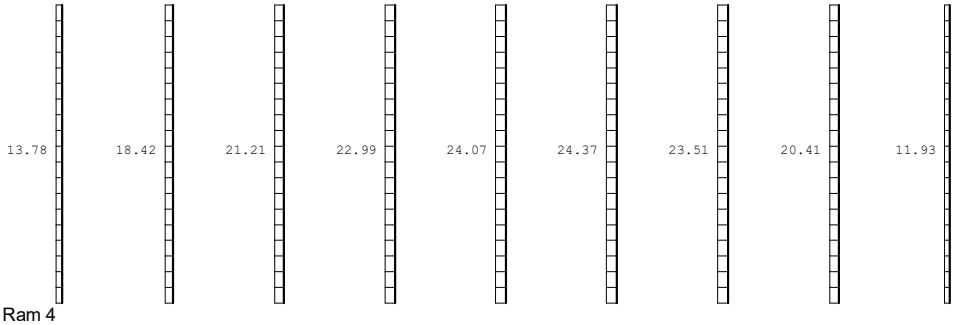
Ram: Ram 4
Uticaji u gredi: max T3= 46.59 / min T3= -132.63 kN

Opt. 17: komb temp 7



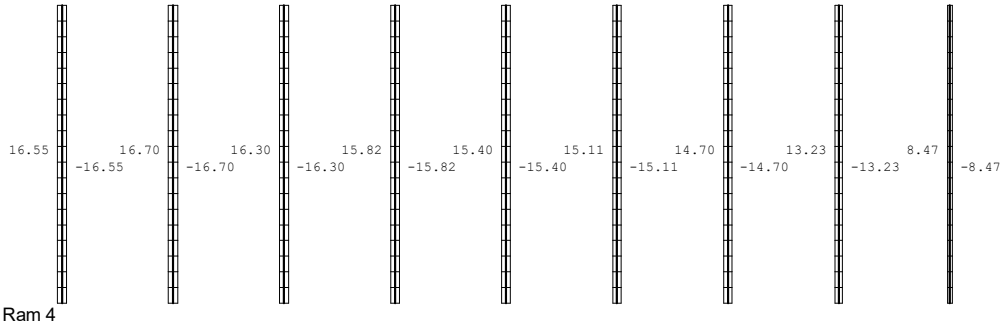
Ram: Ram 4
Uticaji u gredi: max T3= 171.78 / min T3= -343.49 kN

Opt. 18: komb temp 8



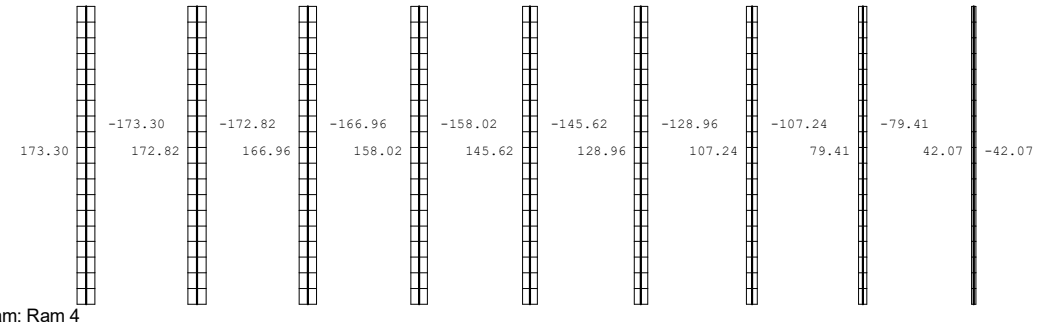
Ram: Ram 4
Uticaji u gredi: max T3= 139.19 / min T3= -92.63 kN

Opt. 20: Sx



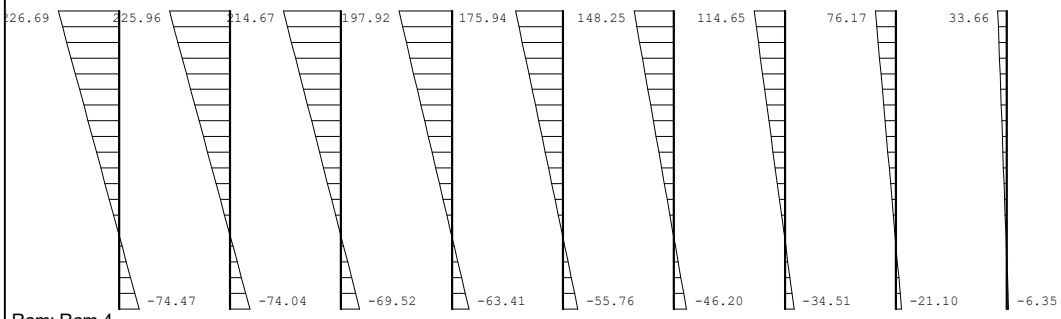
Ram: Ram 4
Uticaji u gredi: max T3= 219.17 / min T3= -219.17 kN

Opt. 21: Sy



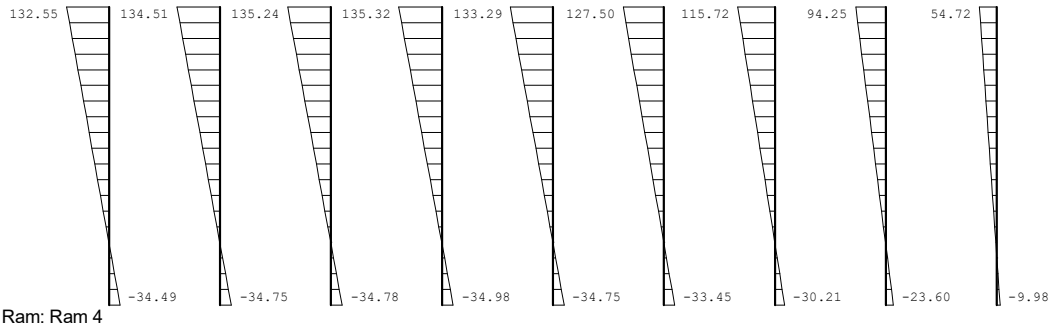
Ram: Ram 4
Uticaji u gredi: max T3= 1172.06 / min T3= -1172.06 kN

Opt. 1: sopstvena tezina (g)



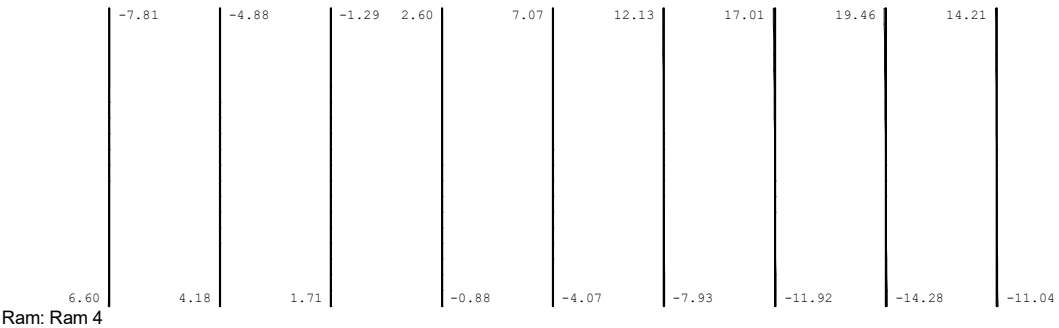
Ram: Ram 4
Uticaji u gredi: max M2= 226.69 / min M2= -87.74 kNm

Opt. 2: mrtav teret (Δg)



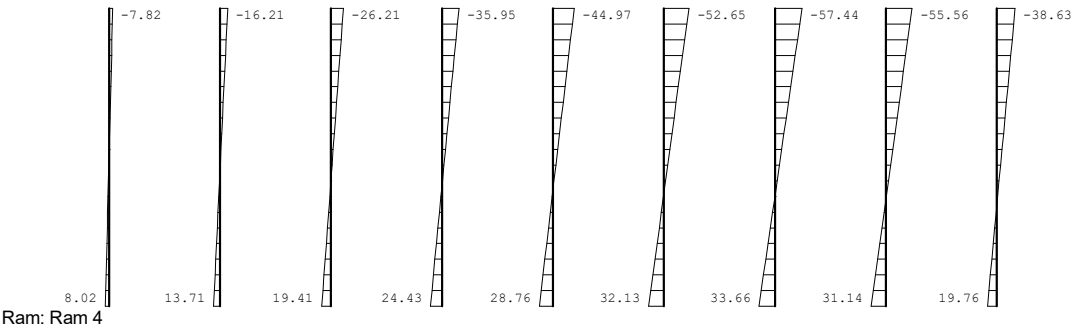
Ram: Ram 4
Uticaji u gredi: max M2= 190.17 / min M2= -99.91 kNm

Opt. 3: horizontalan pritisak tla



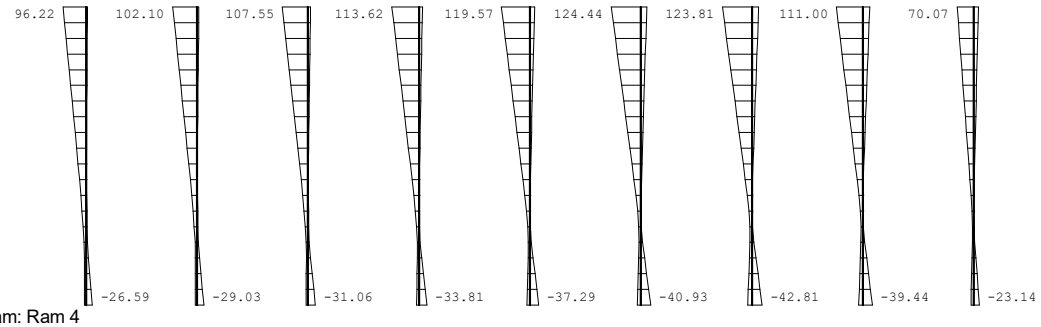
Ram: Ram 4
Uticaji u gredi: max M2= 154.56 / min M2= -662.45 kNm

Opt. 4: skupljanje



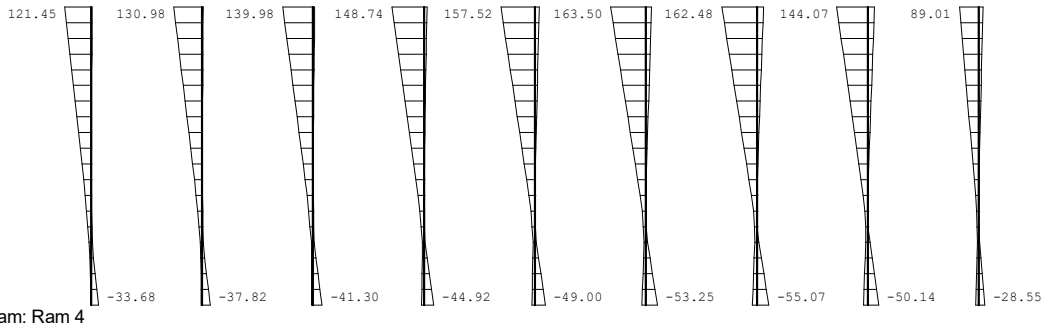
Ram: Ram 4
Uticaji u gredi: max M2= 128.70 / min M2= -88.31 kNm

Opt. 5: LM71



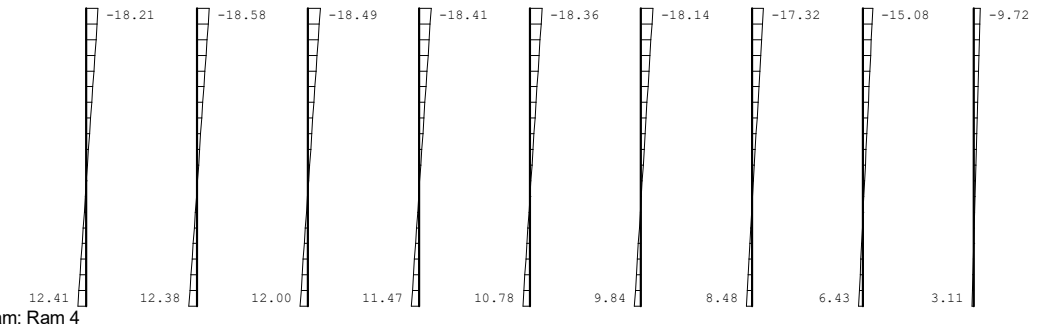
Ram: Ram 4
Uticaji u gredi: max M2= 255.13 / min M2= -157.58 kNm

Opt. 6: SW/2



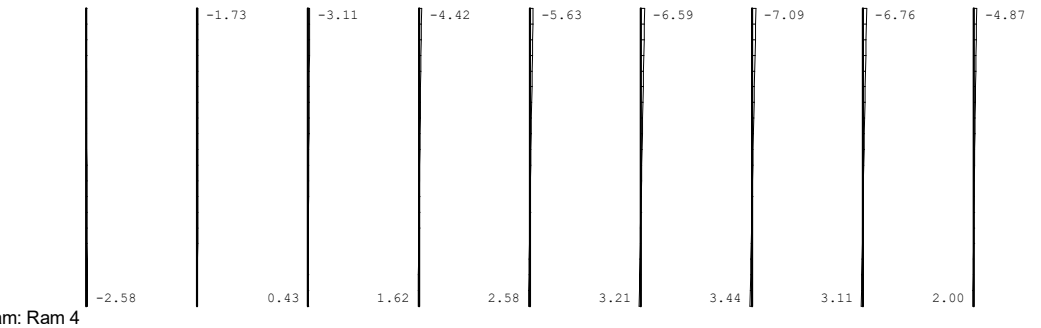
Ram: Ram 4
Uticaji u gredi: max M2= 281.29 / min M2= -189.55 kNm

Opt. 7: KP



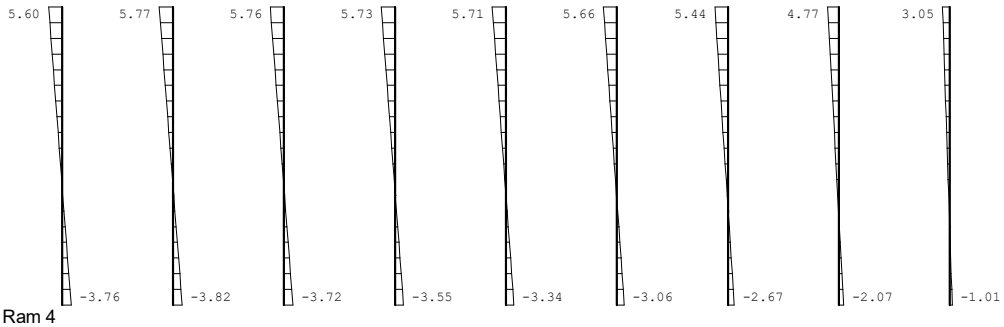
Ram: Ram 4
Uticaji u gredi: max M2= 27.99 / min M2= -91.95 kNm

Opt. 8: voz na nasipu ispred



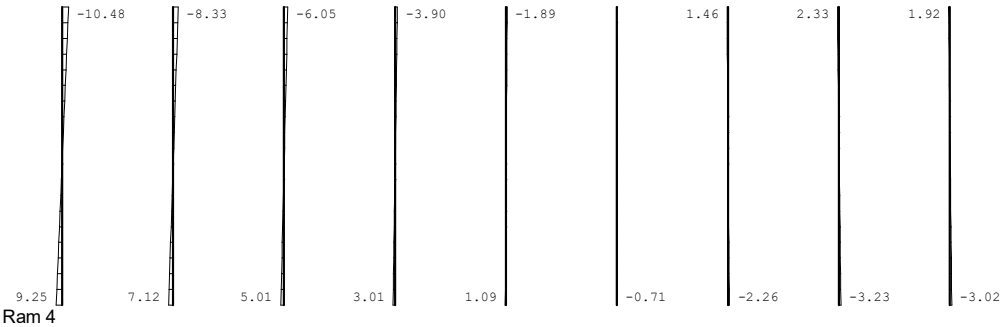
Ram: Ram 4
Uticaji u gredi: max M2= 35.42 / min M2= -106.25 kNm

Opt. 9: voz na nasipu iza



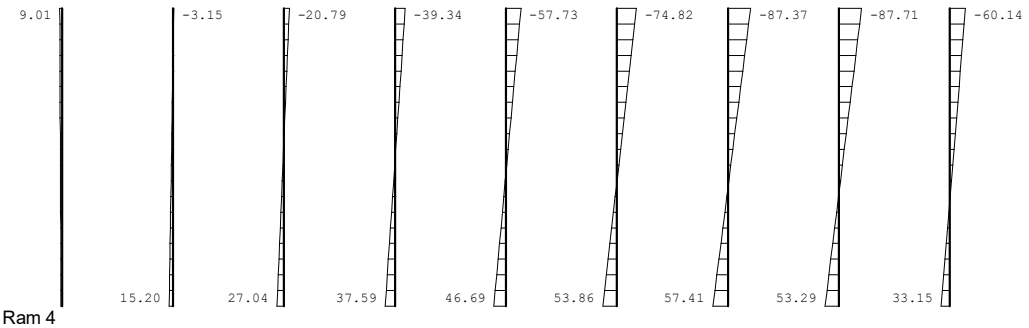
Ram: Ram 4
Uticaji u gredi: max M2= 25.32 / min M2= -9.56 kNm

Opt. 10: voz ispod



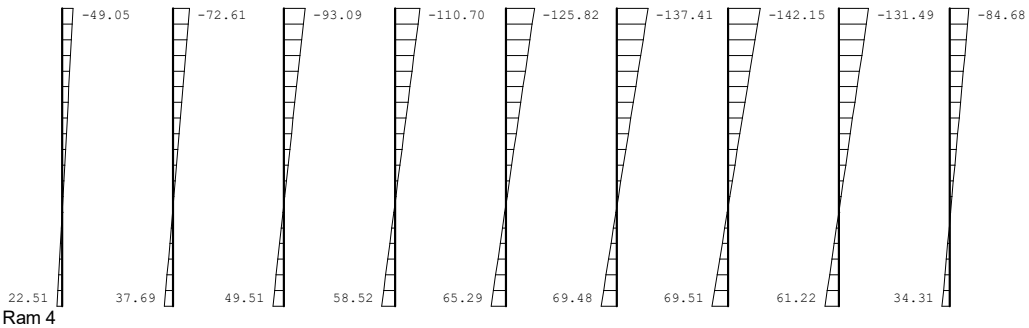
Ram: Ram 4
Uticaji u gredi: max M2= 23.71 / min M2= -96.38 kNm

Opt. 11: komb temp 1



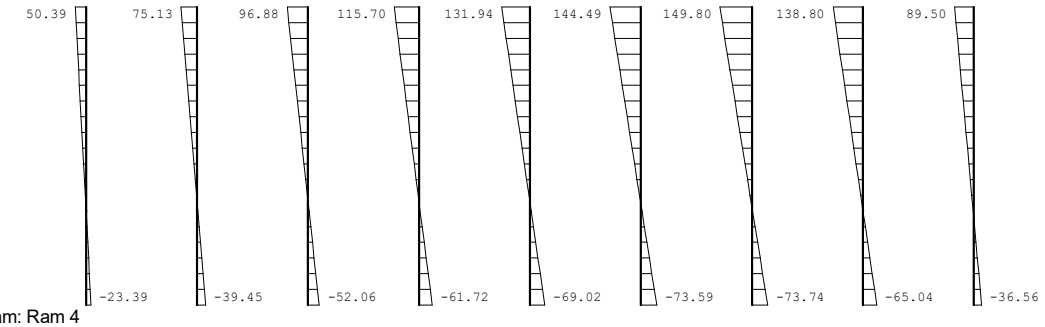
Ram: Ram 4
Uticaji u gredi: max M2= 234.07 / min M2= -187.23 kNm

Opt. 12: komb temp 2



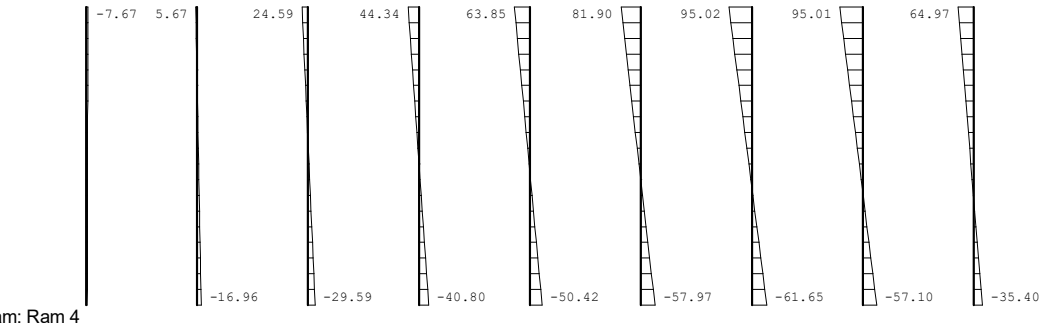
Ram: Ram 4
Uticaji u gredi: max M2= 266.25 / min M2= -268.70 kNm

Opt. 13: komb temp 3



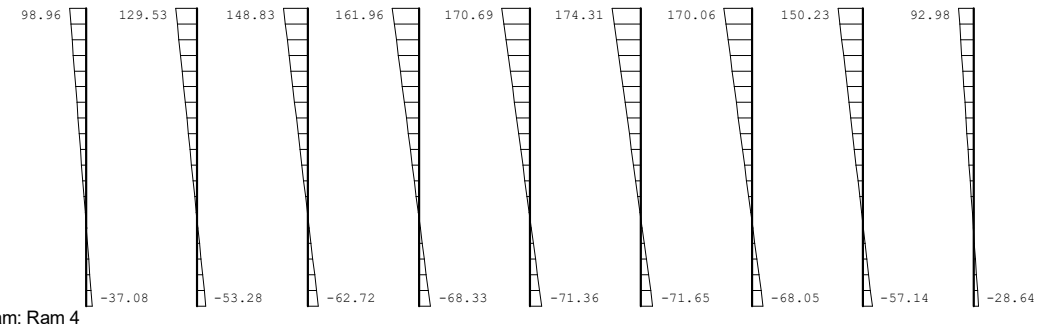
Ram: Ram 4
Uticaji u gredi: max M2= 283.89 / min M2= -282.93 kNm

Opt. 14: komb temp 4



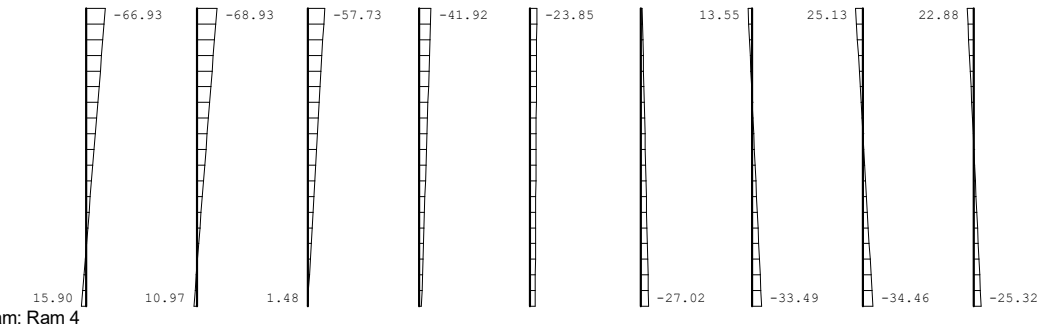
Ram: Ram 4
Uticaji u gredi: max M2= 202.43 / min M2= -250.75 kNm

Opt. 15: komb temp 5



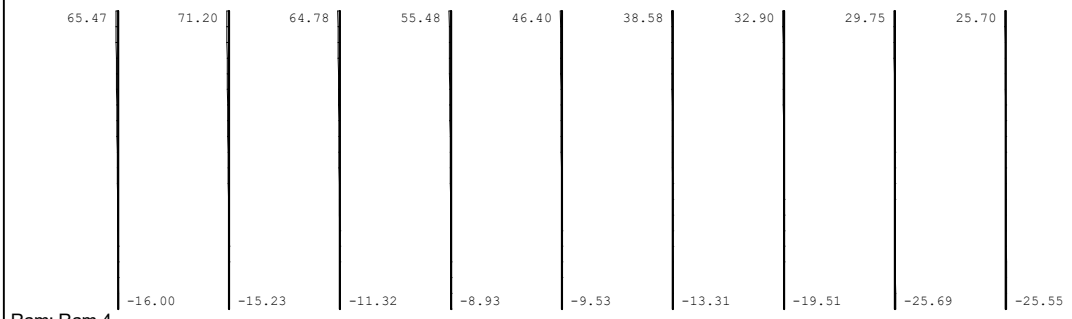
Ram: Ram 4
Uticaji u gredi: max M2= 370.03 / min M2= -251.35 kNm

Opt. 16: komb temp 6



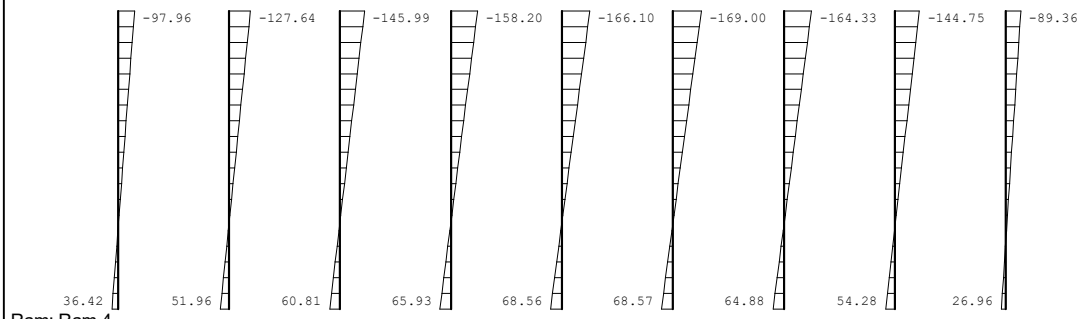
Ram: Ram 4
Uticaji u gredi: max M2= 65.99 / min M2= -211.37 kNm

Opt. 17: komb temp 7



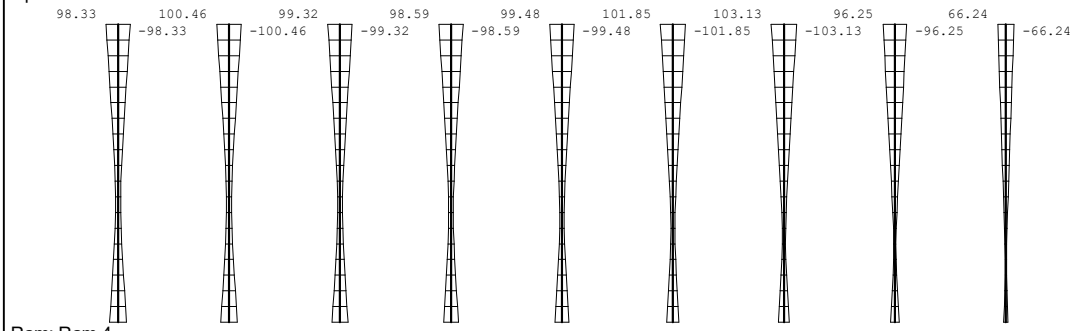
Ram: Ram 4
Uticaji u gredi: max M2= 1829.71 / min M2= -1598.58 kNm

Opt. 18: komb temp 8



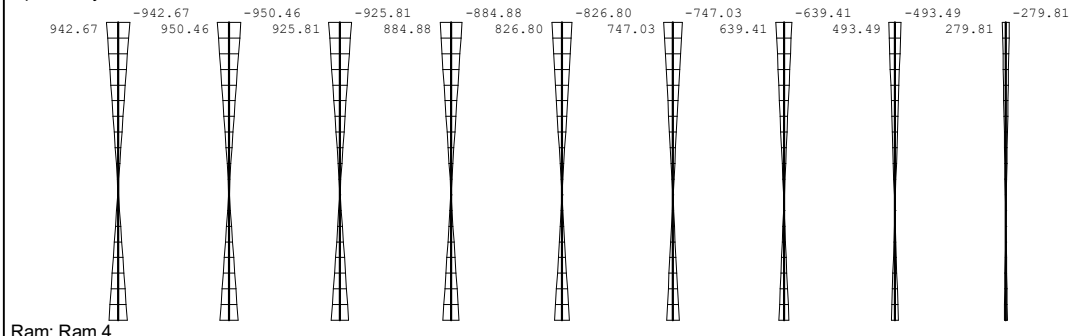
Ram: Ram 4
Uticaji u gredi: max M2= 240.62 / min M2= -362.10 kNm

Opt. 20: Sx



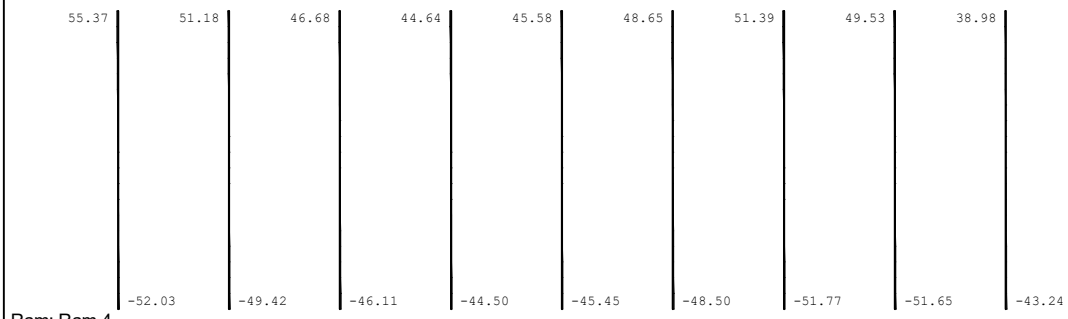
Ram: Ram 4
Uticaji u gredi: max M2= 494.26 / min M2= -494.26 kNm

Opt. 21: Sy



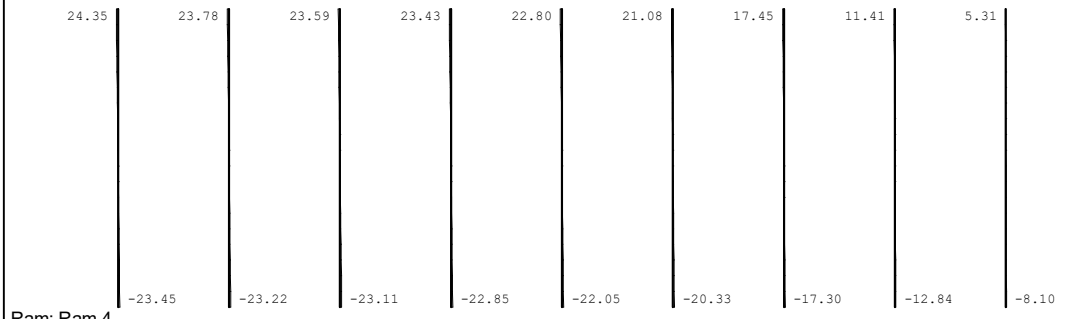
Ram: Ram 4
Uticaji u gredi: max M2= 4928.81 / min M2= -4928.81 kNm

Opt. 1: sopstvena tezina (g)



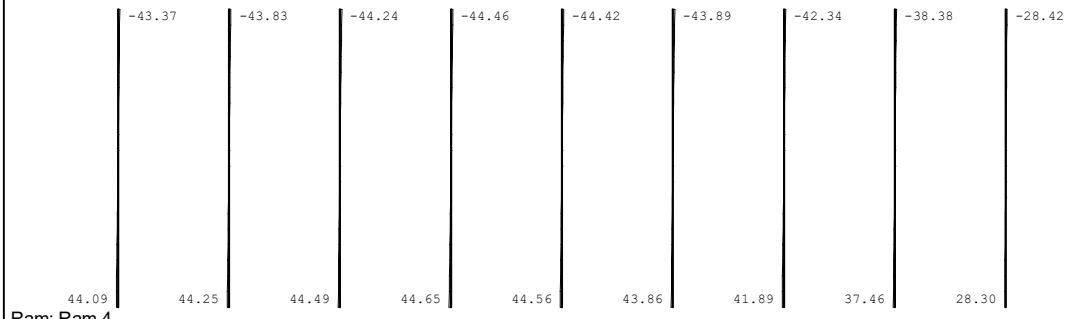
Ram: Ram 4
Uticaji u gredi: max M3= 2548.83 / min M3= -912.59 kNm

Opt. 2: mrtav teret (Δg)



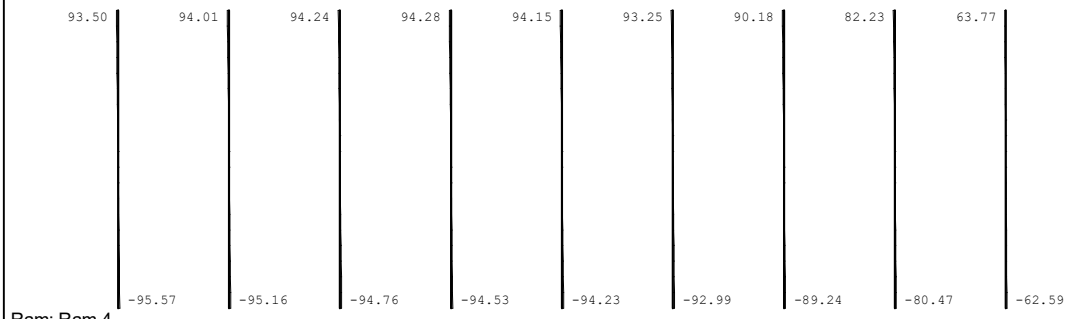
Ram: Ram 4
Uticaji u gredi: max M3= 806.34 / min M3= -77.64 kNm

Opt. 3: horizontalan pritisak tla



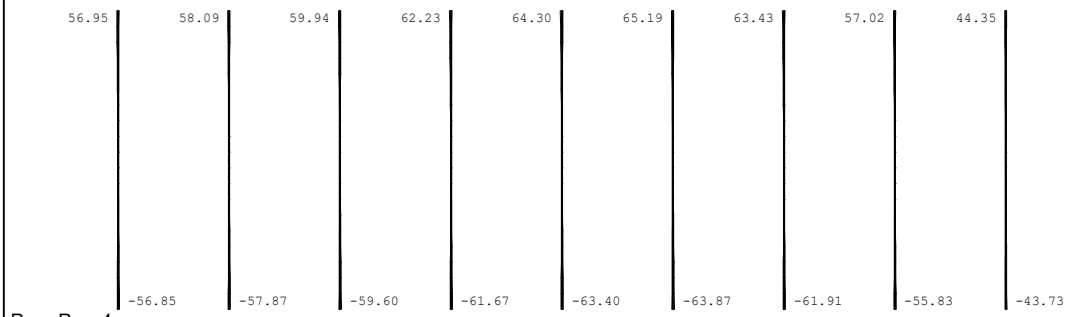
Ram: Ram 4
Uticaji u gredi: max M3= 386.20 / min M3= -1455.26 kNm

Opt. 4: skupljanje



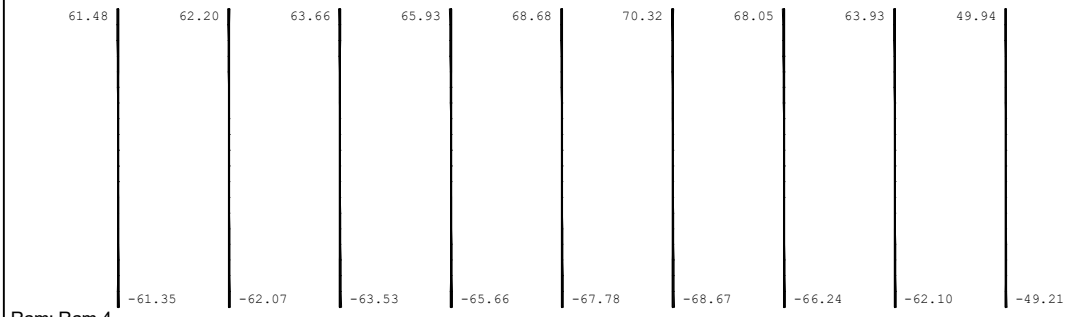
Ram: Ram 4
Uticaji u gredi: max M3= 3260.02 / min M3= -471.05 kNm

Opt. 5: LM71



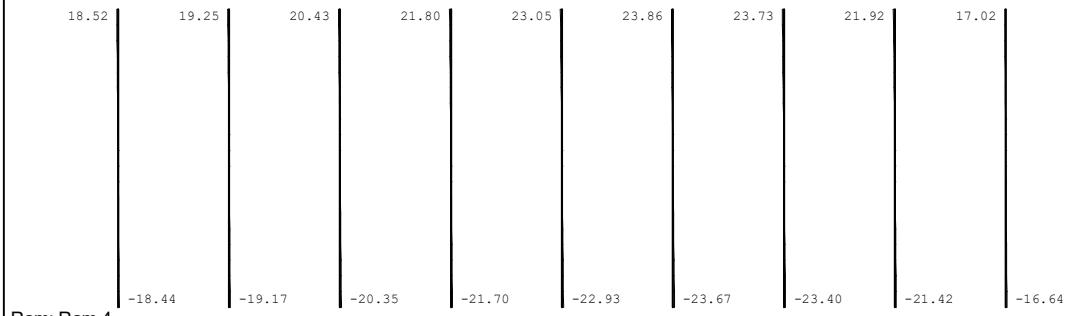
Ram: Ram 4
Uticaji u gredi: max M3= 2554.62 / min M3= -1273.44 kNm

Opt. 6: SW/2



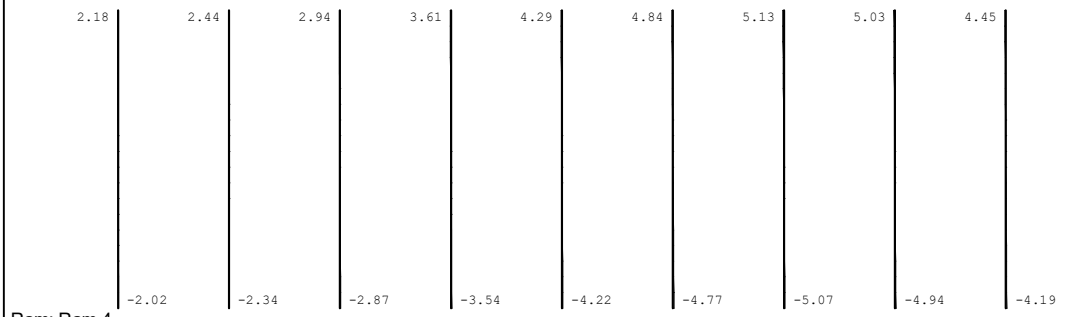
Ram: Ram 4
Uticaji u gredi: max M3= 2842.69 / min M3= -1082.61 kNm

Opt. 7: KP



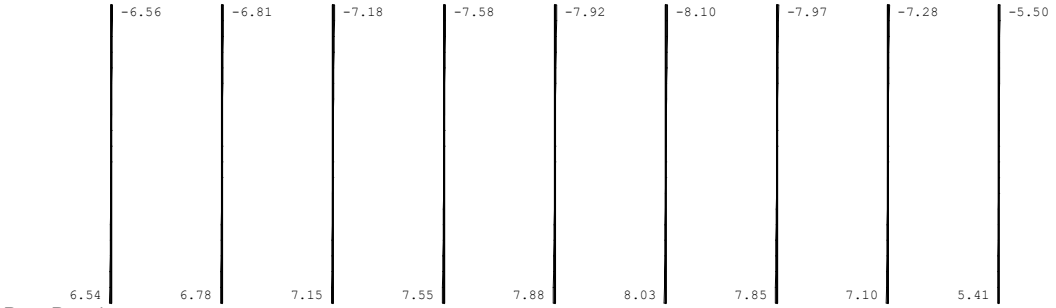
Ram: Ram 4
Uticaji u gredi: max M3= 875.58 / min M3= -299.56 kNm

Opt. 8: voz na nasipu ispred



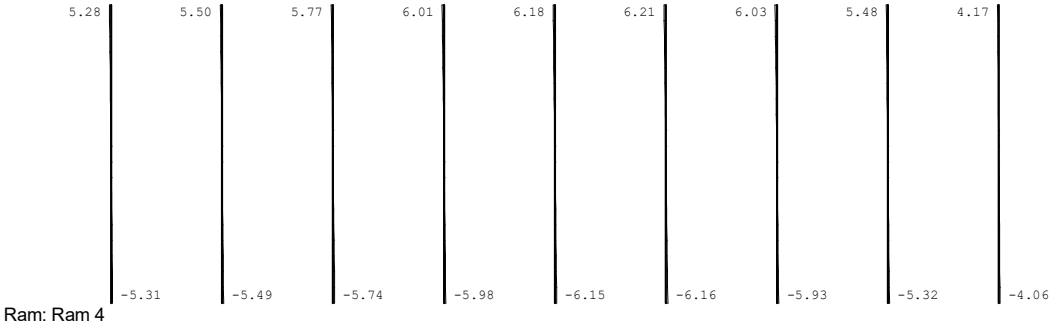
Ram: Ram 4
Uticaji u gredi: max M3= 260.64 / min M3= -140.72 kNm

Opt. 9: voz na nasipu iza



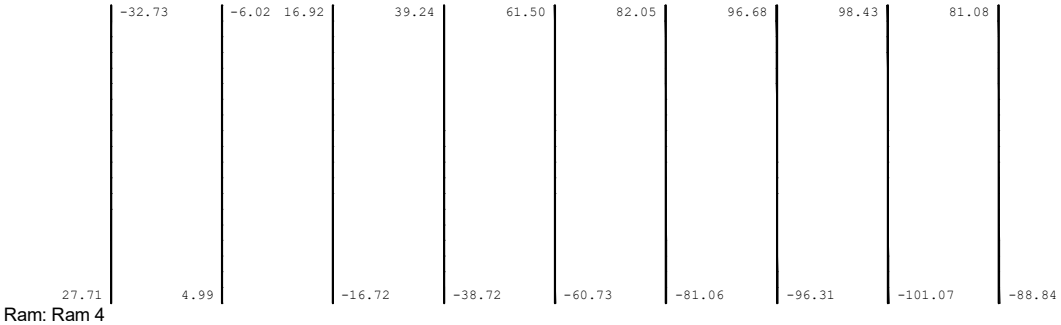
Ram: Ram 4
Uticaji u gredi: max M3= 96.64 / min M3= -280.79 kNm

Opt. 10: voz ispod



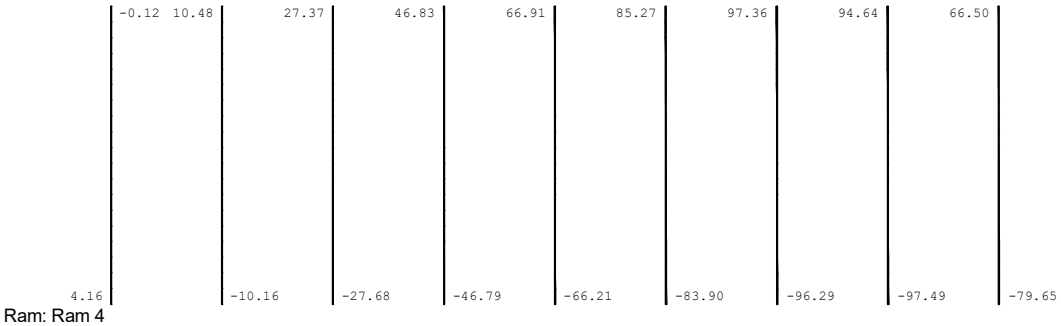
Ram: Ram 4
Uticaji u gredi: max M3= 200.20 / min M3= -55.46 kNm

Opt. 11: komb temp 1



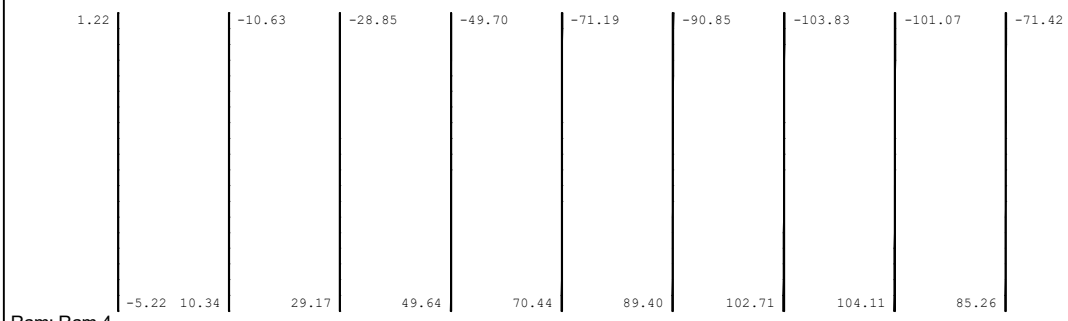
Ram: Ram 4
Uticaji u gredi: max M3= 5499.28 / min M3= -957.40 kNm

Opt. 12: komb temp 2



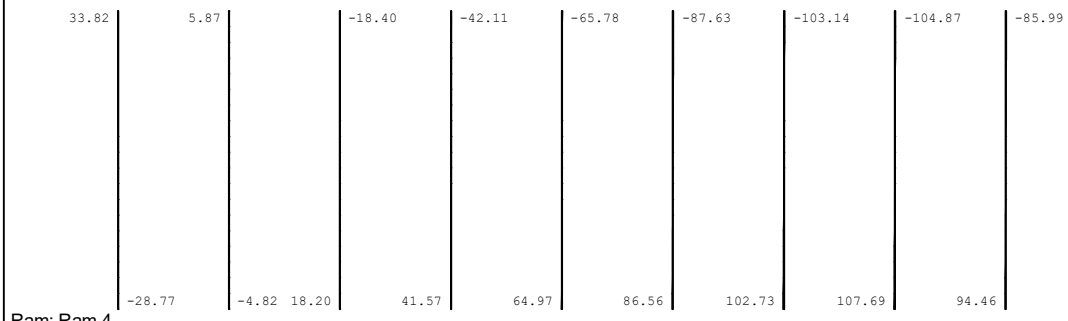
Ram: Ram 4
Uticaji u gredi: max M3= 5193.05 / min M3= -693.82 kNm

Opt. 13: komb temp 3



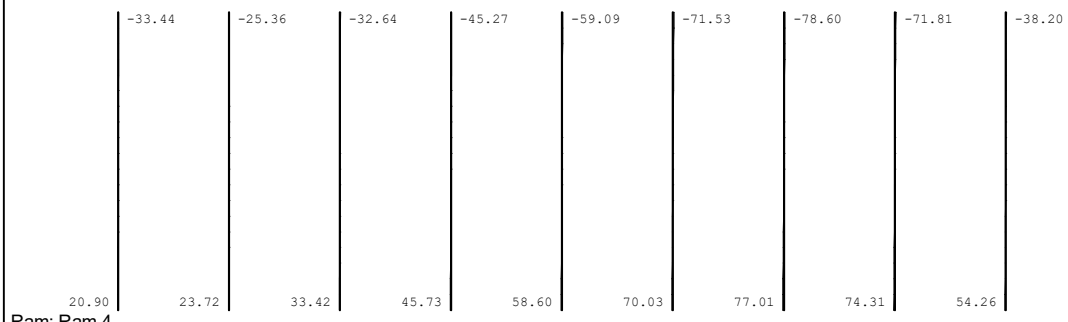
Ram: Ram 4
Uticaji u gredi: max M3= 704.40 / min M3= -5549.47 kNm

Opt. 14: komb temp 4



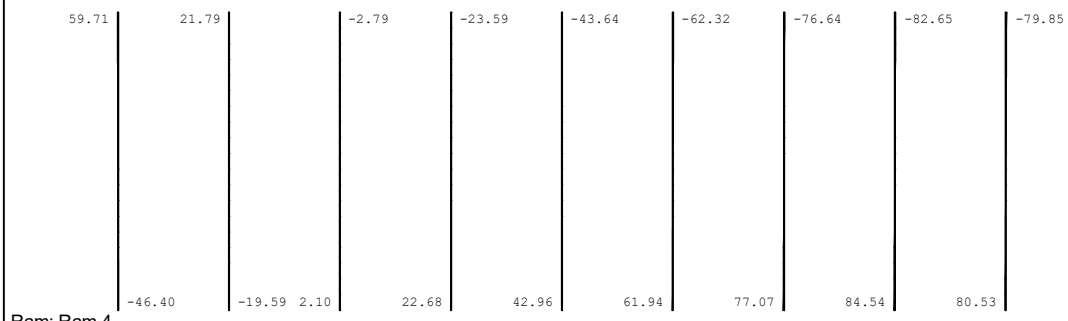
Ram: Ram 4
Uticaji u gredi: max M3= 1006.86 / min M3= -5855.69 kNm

Opt. 15: komb temp 5



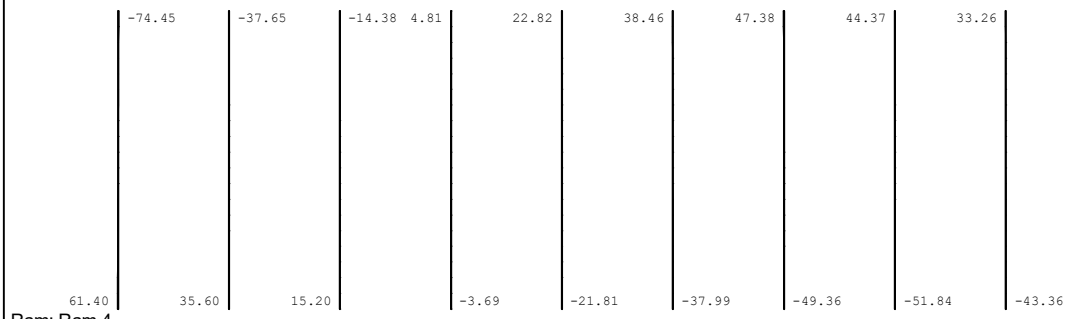
Ram: Ram 4
Uticaji u gredi: max M3= 1656.00 / min M3= -3839.47 kNm

Opt. 16: komb temp 6



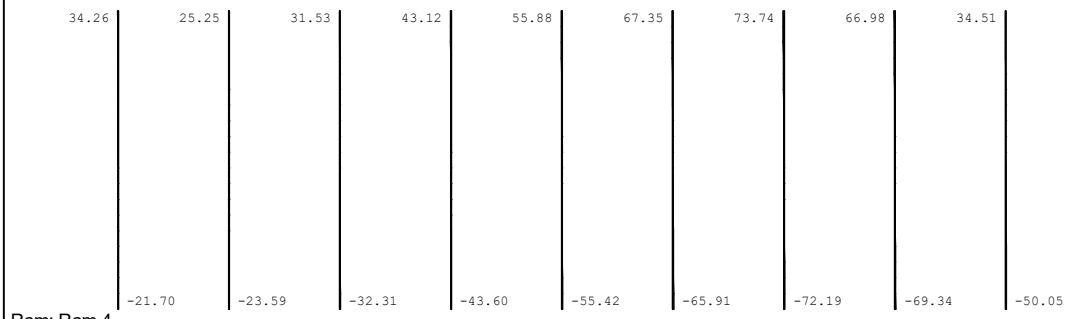
Ram: Ram 4
Uticaji u gredi: max M3= 1209.16 / min M3= -4714.40 kNm

Opt. 17: komb temp 7



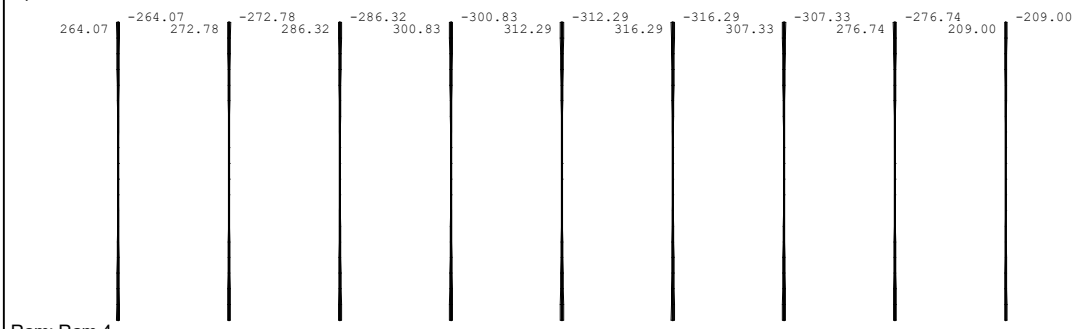
Ram: Ram 4
Uticaji u gredi: max M3= 4991.16 / min M3= -1022.00 kNm

Opt. 18: komb temp 8



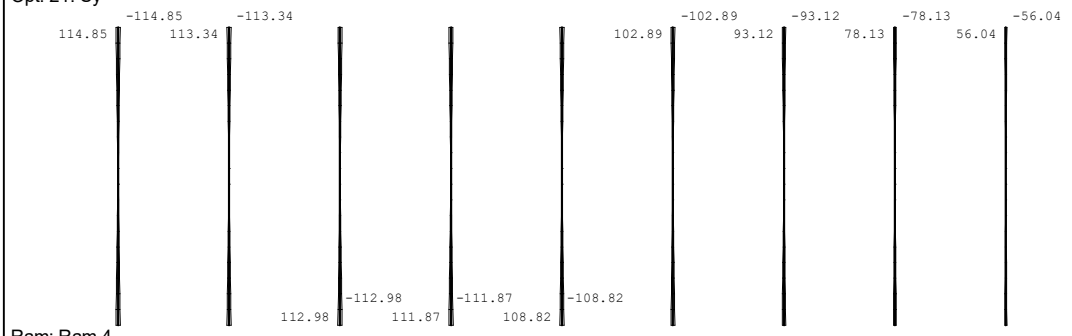
Ram: Ram 4
Uticaji u gredi: max M3= 3572.16 / min M3= -1648.07 kNm

Opt. 20: Sx



Ram: Ram 4
Uticaji u gredi: max M3= 11086.95 / min M3= -11086.95 kNm

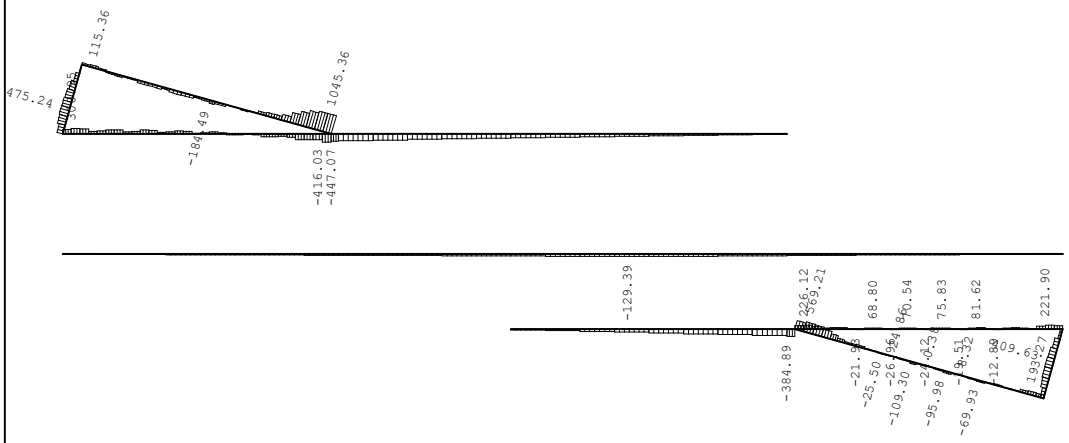
Opt. 21: Sy



Ram: Ram 4
Uticaji u gredi: max M3= 3242.18 / min M3= -3242.18 kNm

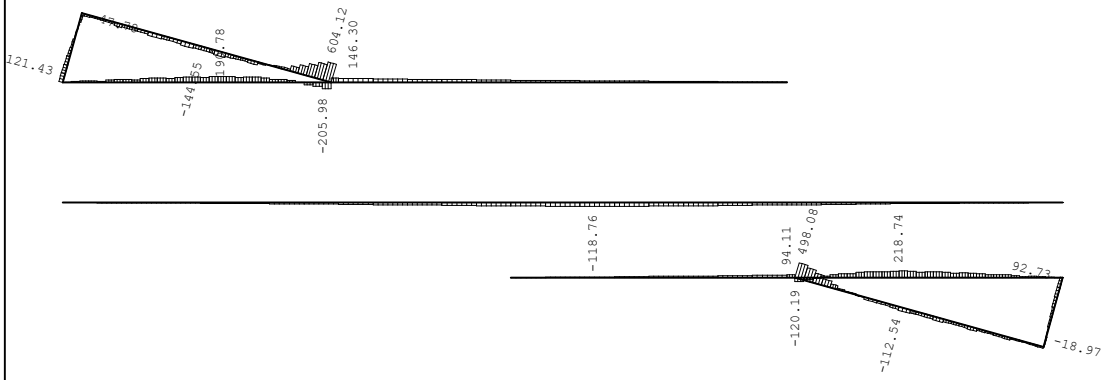
5.5.5 Наглавне греде

Opt. 1: sopstvena tezina (g)



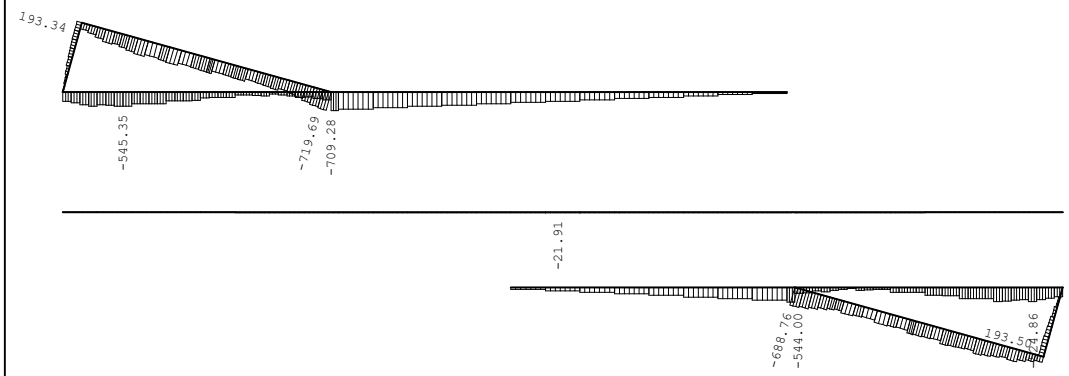
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 1045.36 / min N1= -447.07 kN

Opt. 2: mrtav teret (Δg)



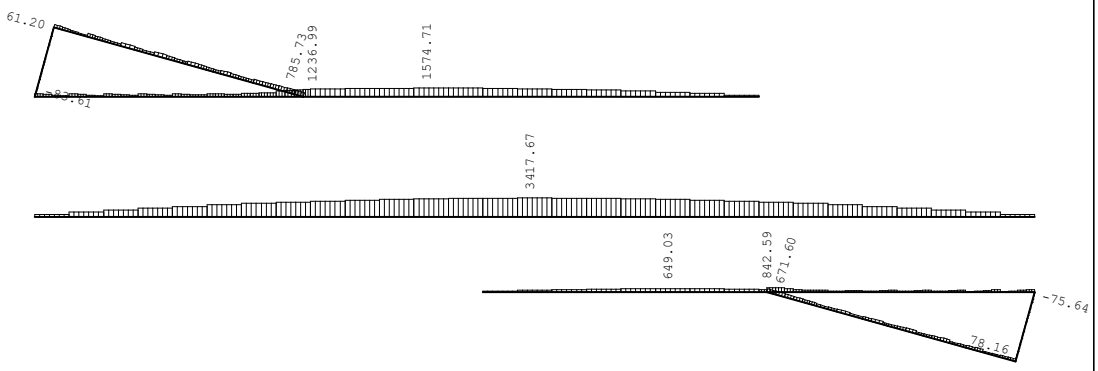
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 604.12 / min N1= -205.98 kN

Opt. 3: horizontalan pritisak tla



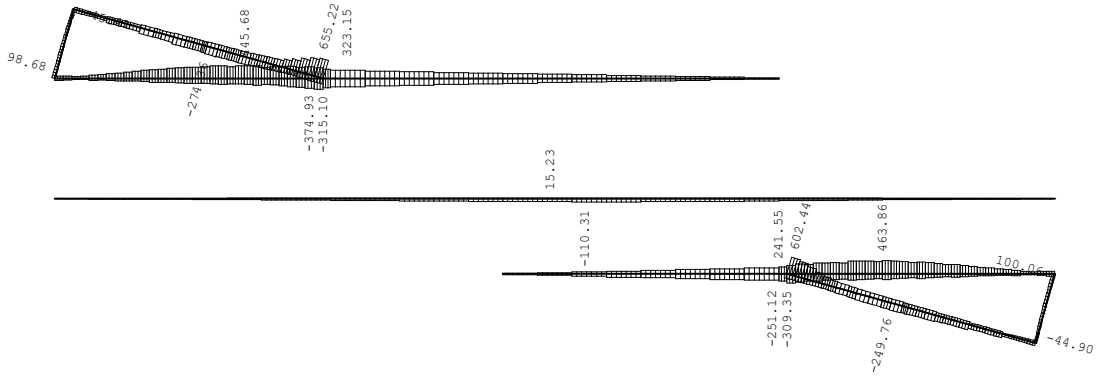
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 193.50 / min N1= -719.69 kN

Opt. 4: skupljanje



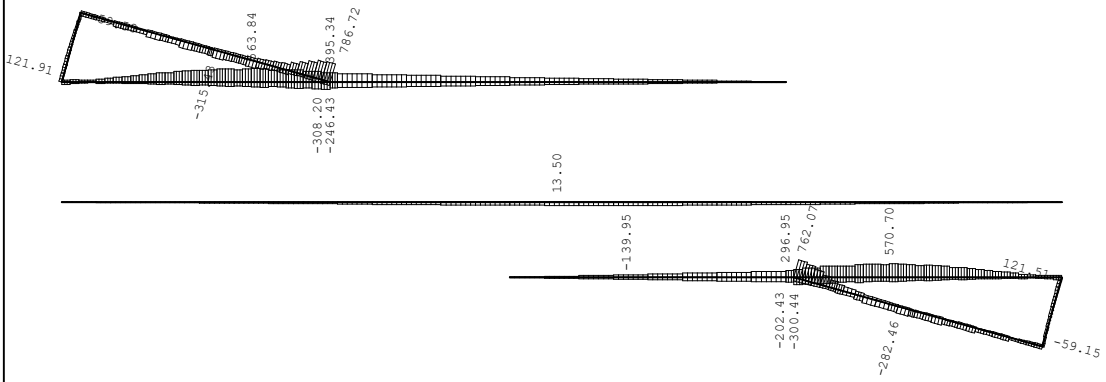
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 3417.67 / min N1= -83.61 kN

Opt. 5: LM71



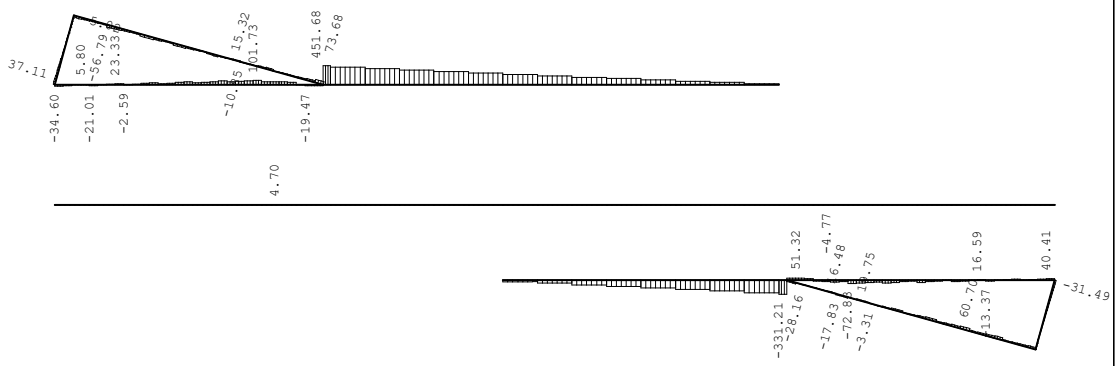
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 655.22 / min N1= -374.93 kN

Opt. 6: SW/2



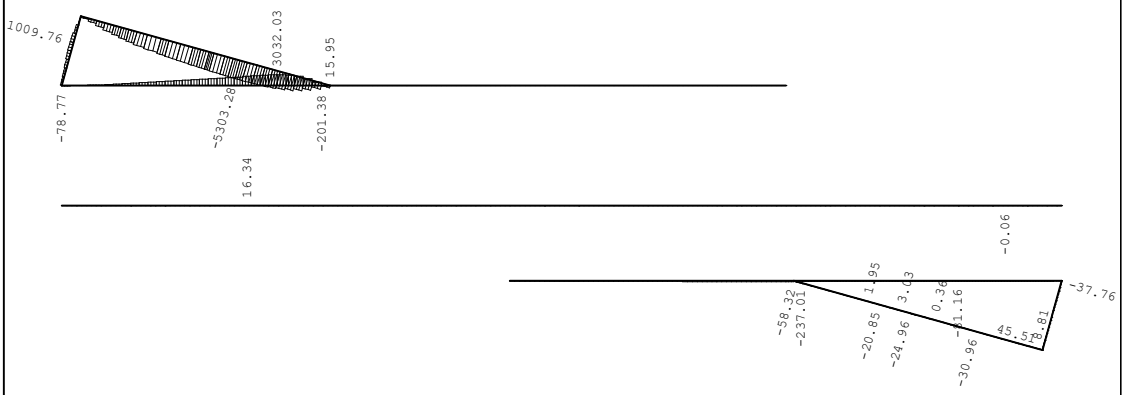
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 786.72 / min N1= -315.43 kN

Opt. 7: KP



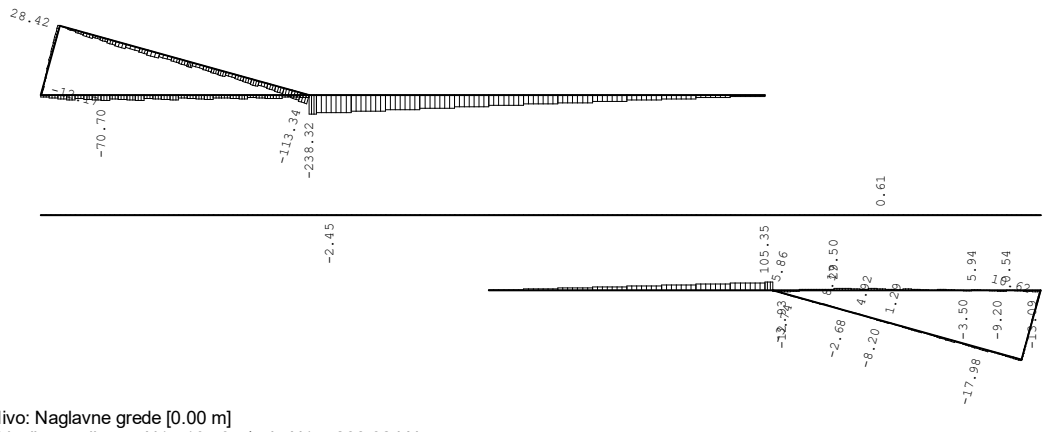
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 451.68 / min N1= -331.21 kN

Opt. 8: voz na nasipu ispred



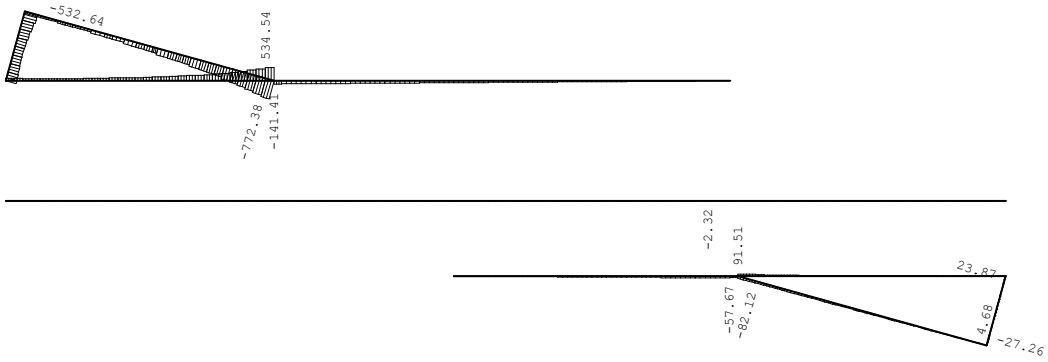
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 3032.03 / min N1= -5303.28 kN

Opt. 9: voz na nasipu iza



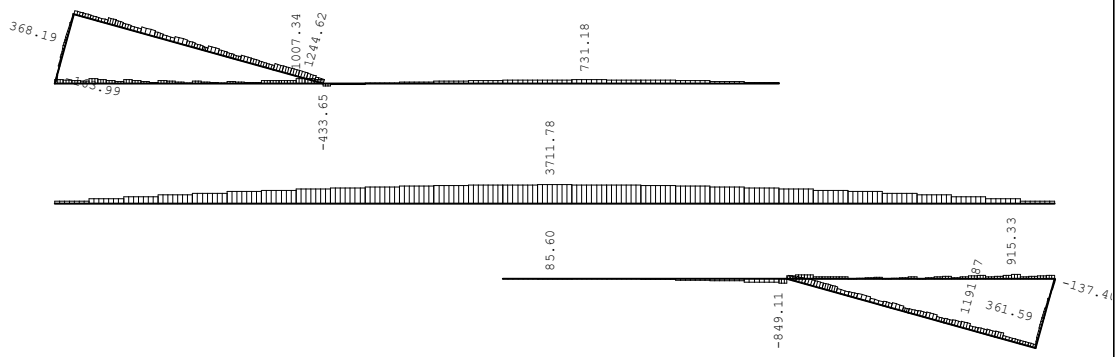
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 105.35 / min N1= -238.32 kN

Opt. 10: voz ispod



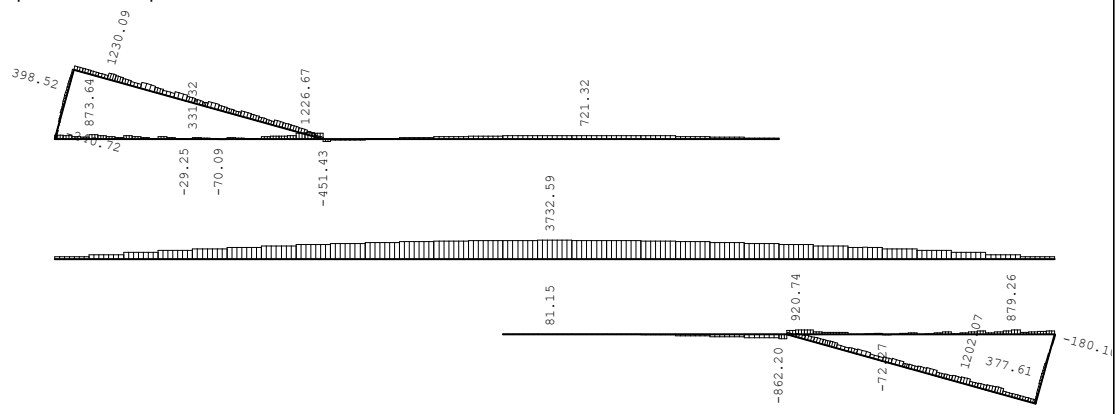
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 534.54 / min N1= -772.38 kN

Opt. 11: komb temp 1



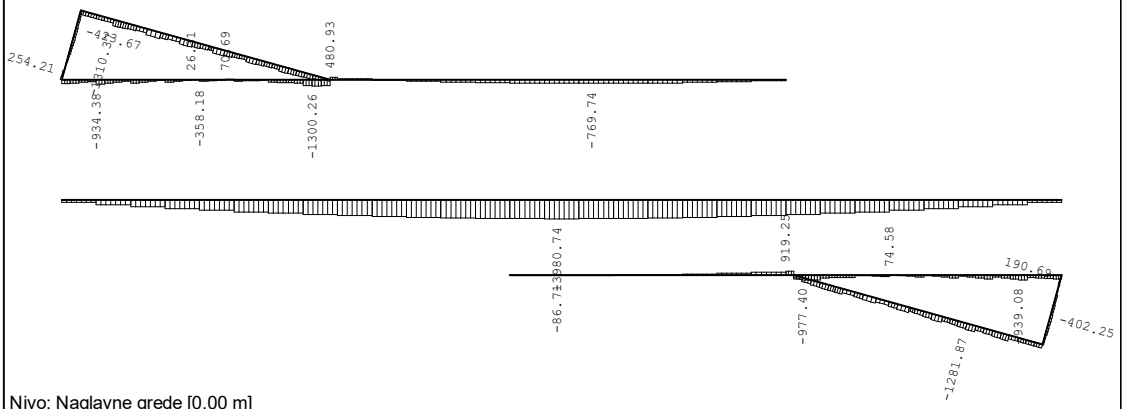
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 3711.78 / min N1= -849.11 kN

Opt. 12: komb temp 2



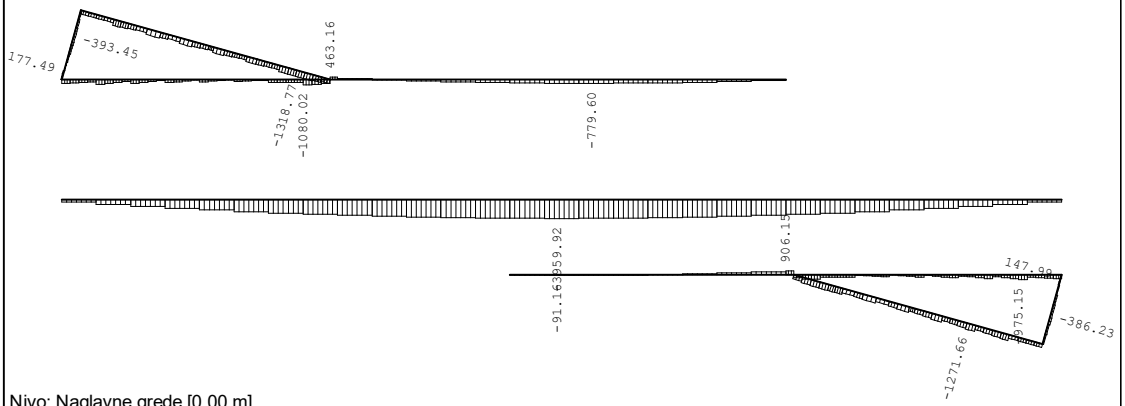
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 3732.59 / min N1= -862.20 kN

Opt. 13: komb temp 3



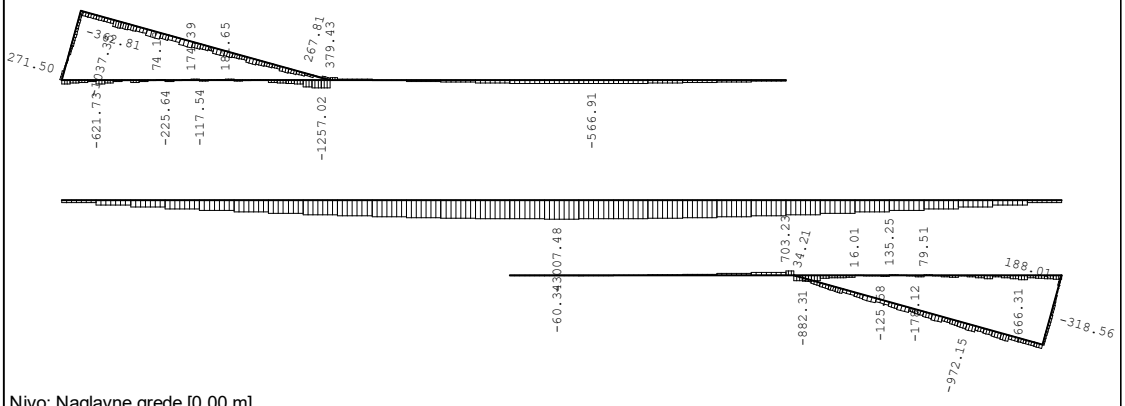
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 919.25 / min N1= -3980.74 kN

Opt. 14: komb temp 4



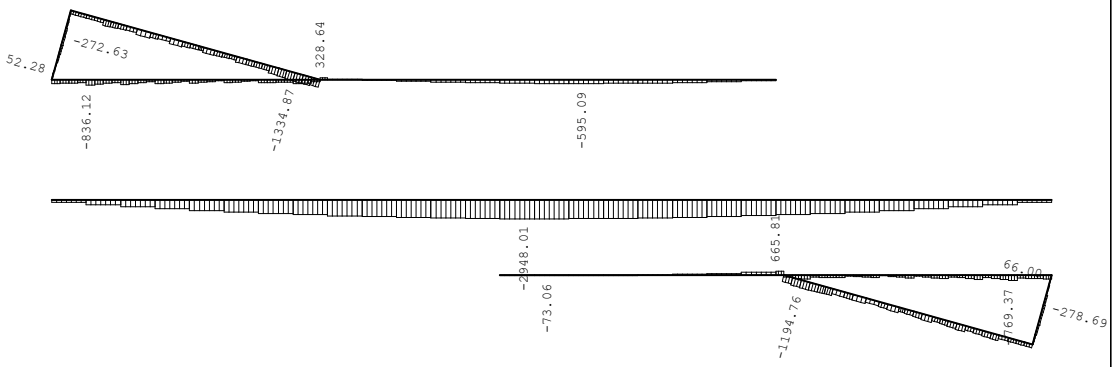
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 906.15 / min N1= -3959.92 kN

Opt. 15: komb temp 5



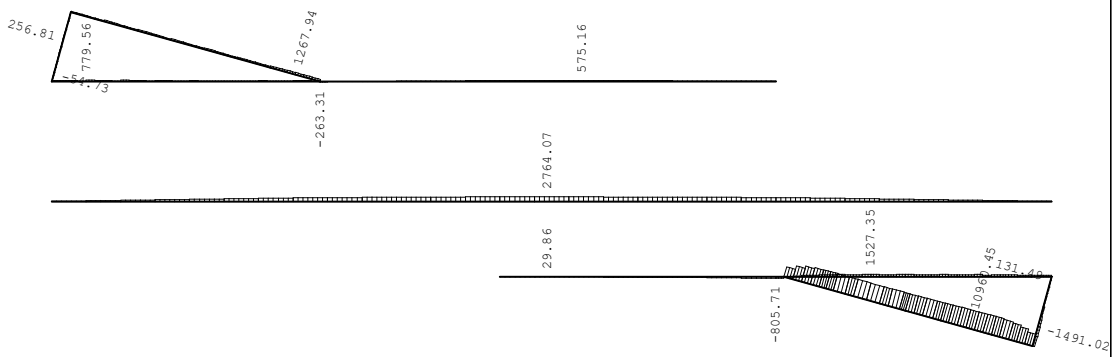
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 703.23 / min N1= -3007.48 kN

Opt. 16: komb temp 6



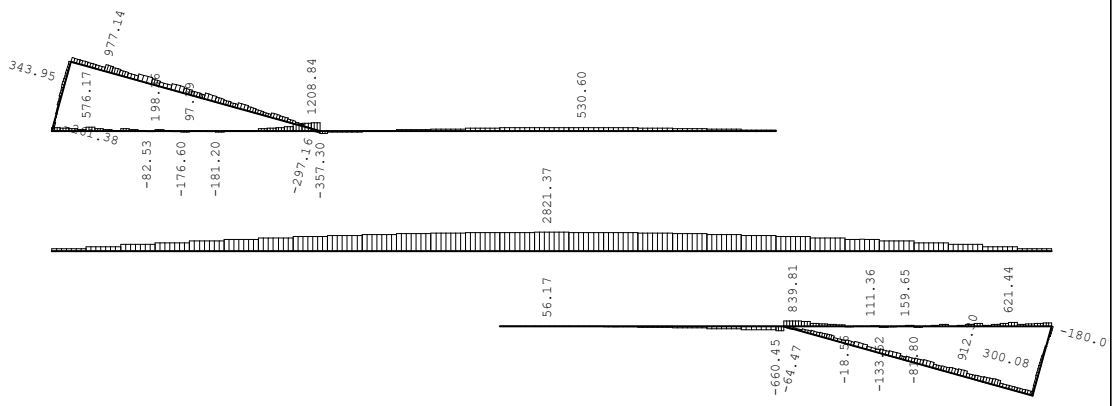
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 665.81 / min N1= -2948.01 kN

Opt. 17: komb temp 7



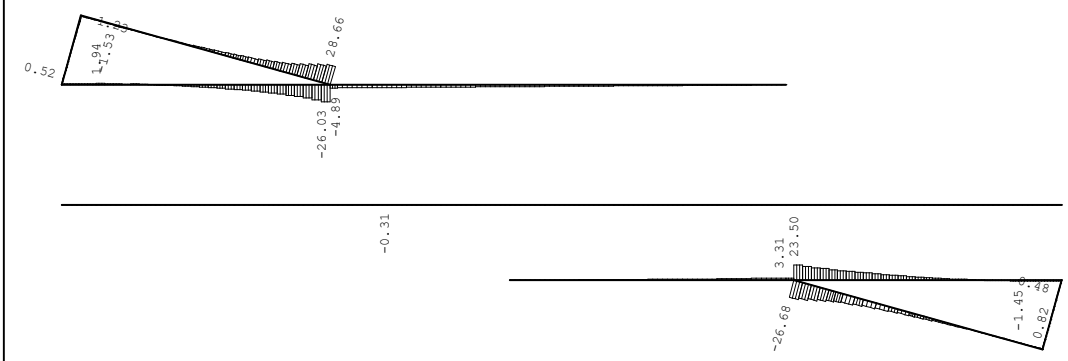
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 10960.45 / min N1= -1491.02 kN

Opt. 18: komb temp 8



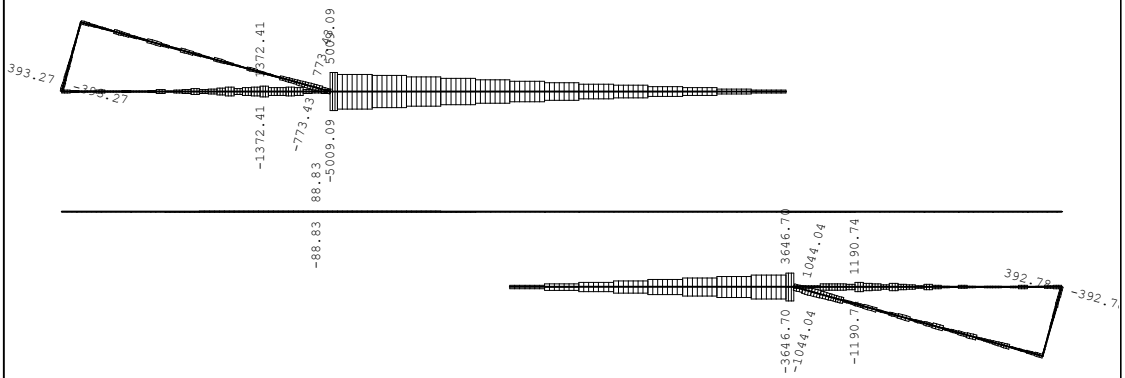
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 2821.37 / min N1= -660.45 kN

Opt. 19: BU



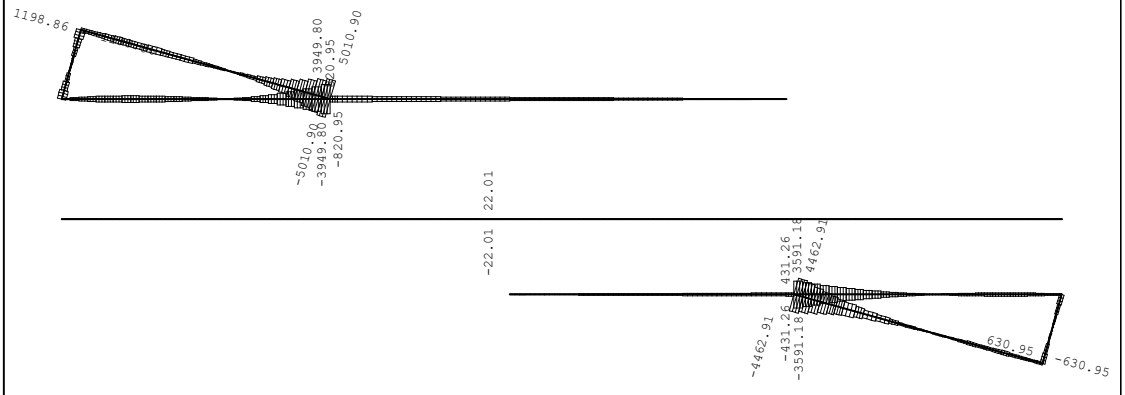
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 28.66 / min N1= -26.68 kN

Opt. 20: Sx



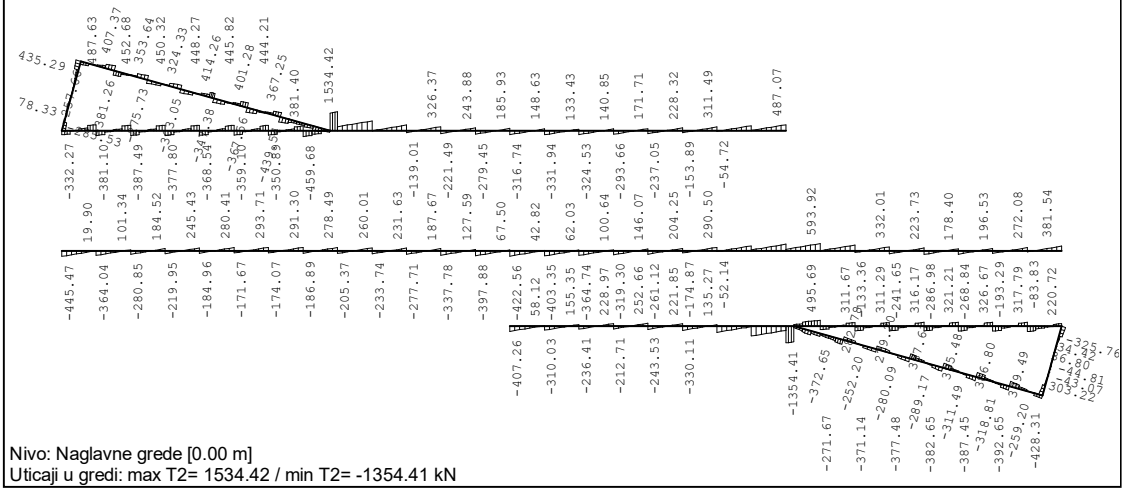
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 5009.09 / min N1= -5009.09 kN

Opt. 21: Sy



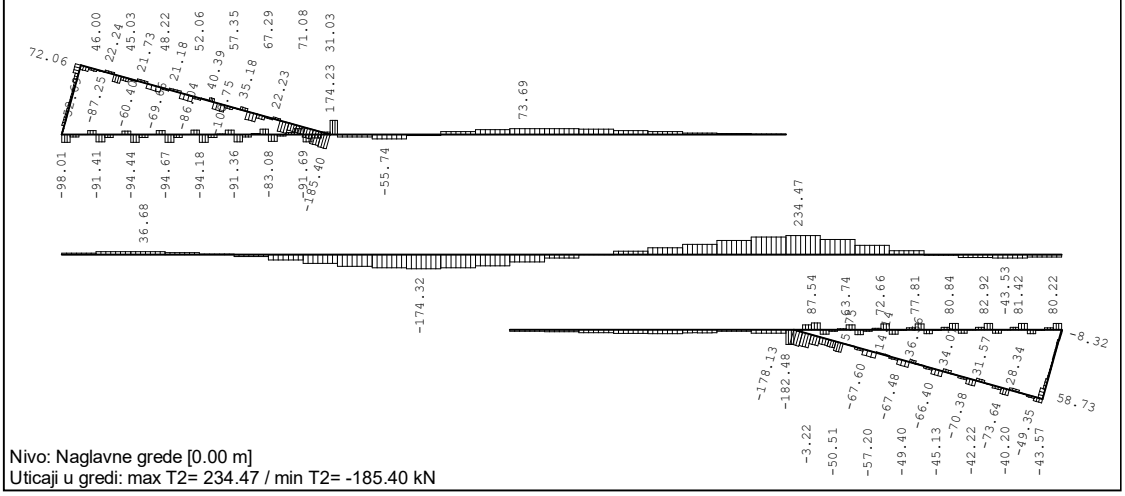
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max N1= 5010.90 / min N1= -5010.90 kN

Opt. 1: sopstvena tezina (g)



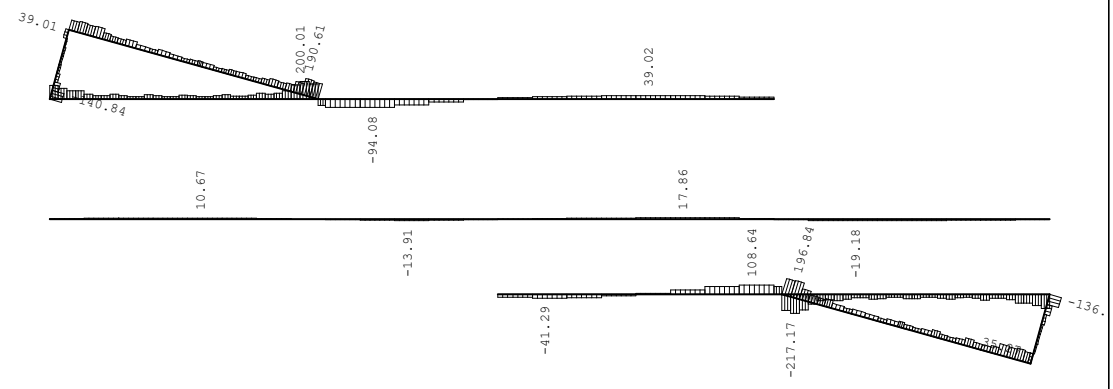
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1534.42 / min T2= -1354.41 kN

Opt. 2: mrtav teret (Δg)



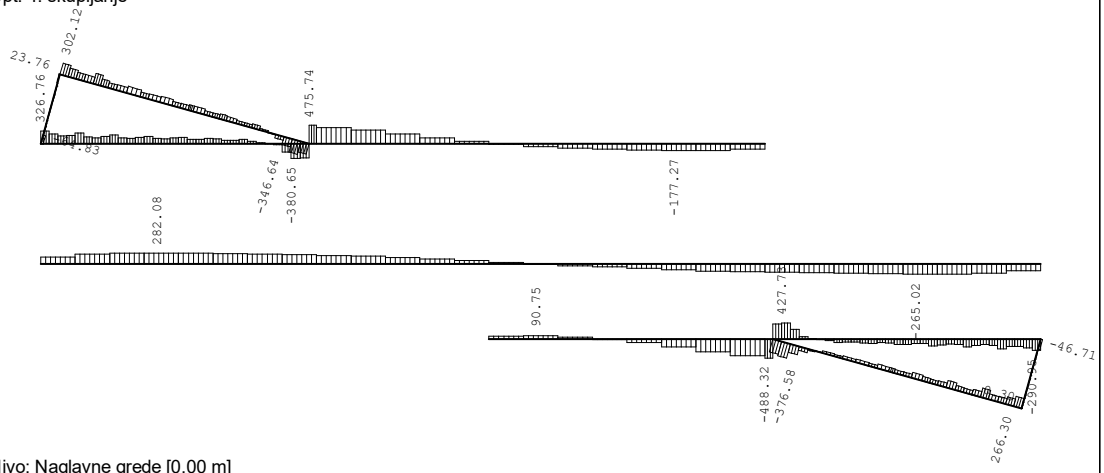
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 234.47 / min T2= -185.40 kN

Opt. 3: horizontalan pritisak tla



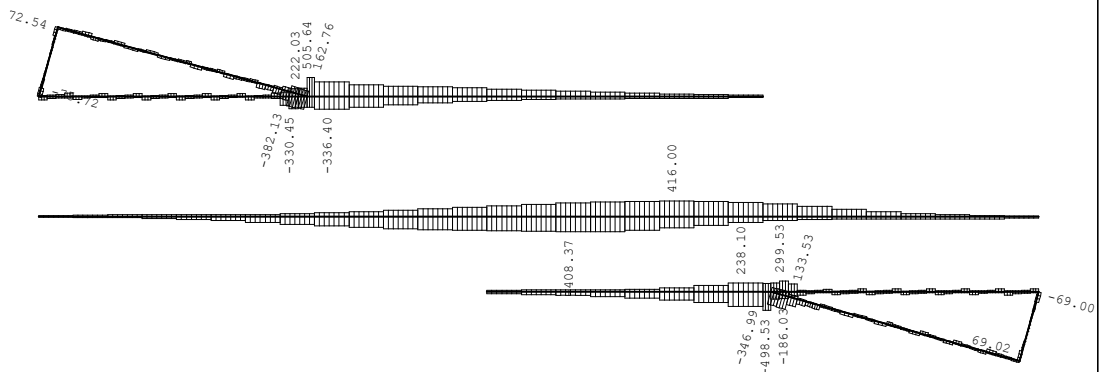
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 200.01 / min T2= -217.17 kN

Opt. 4: skupljanje



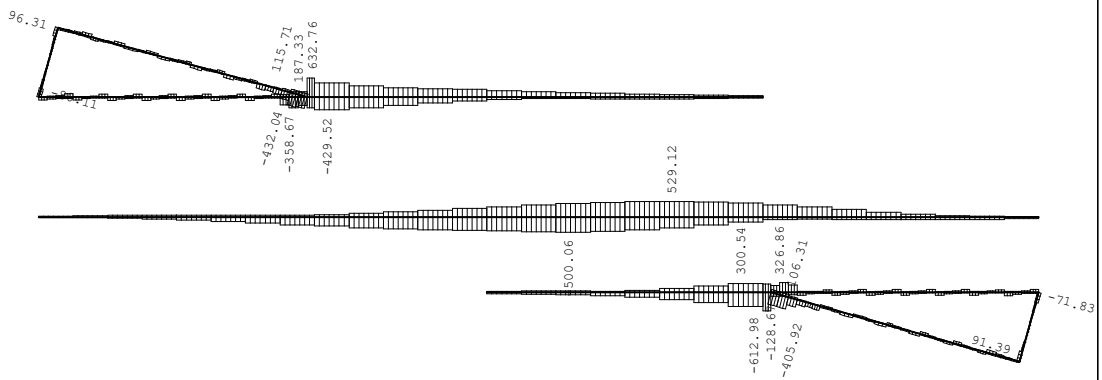
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 475.74 / min T2= -488.32 kN

Opt. 5: LM71



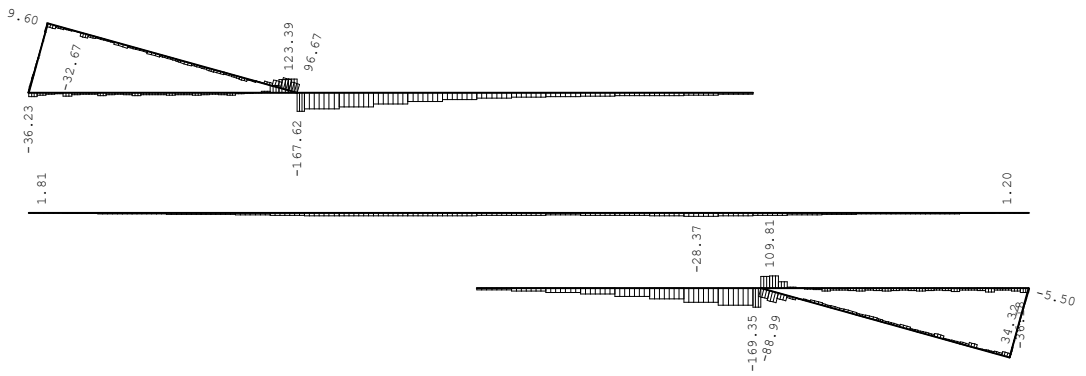
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 505.64 / min T2= -498.53 kN

Opt. 6: SW/2



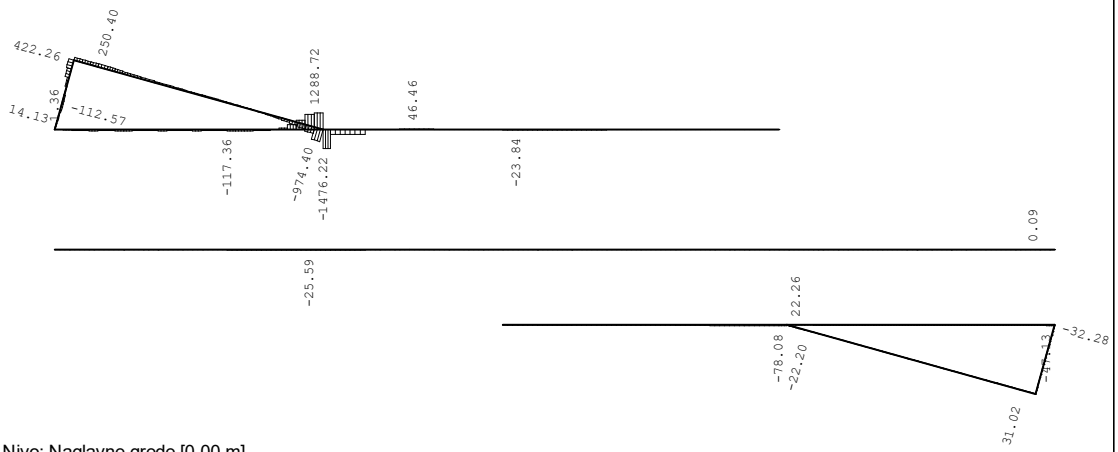
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 632.76 / min T2= -612.98 kN

Opt. 7: KP



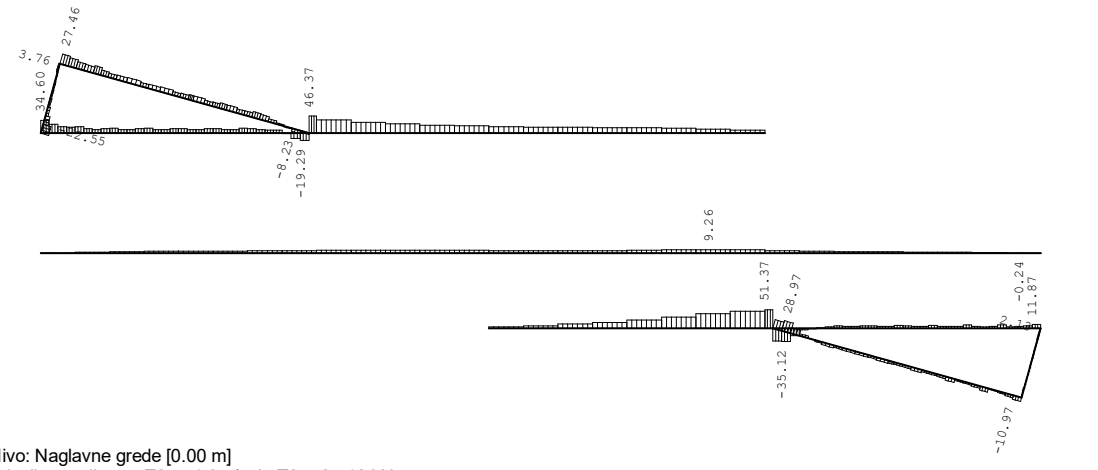
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 123.39 / min T2= -169.35 kN

Opt. 8: voz na nasipu ispred



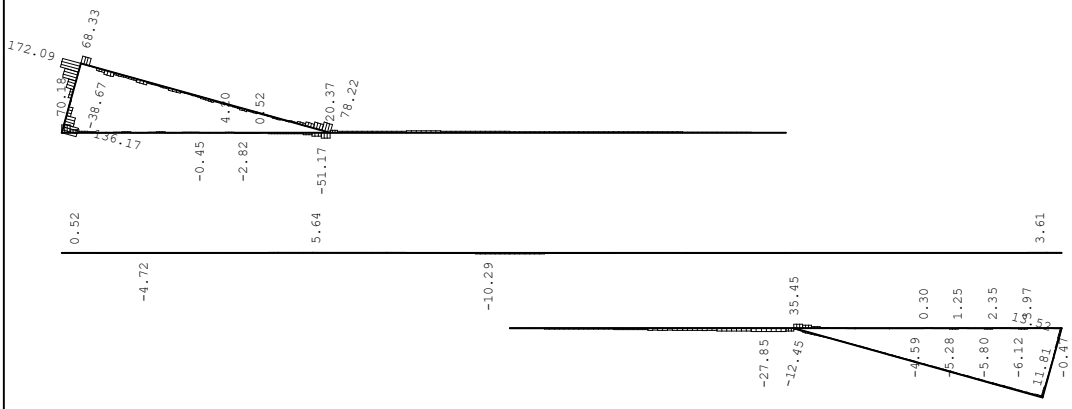
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1288.72 / min T2= -1476.22 kN

Opt. 9: voz na nasipu iza



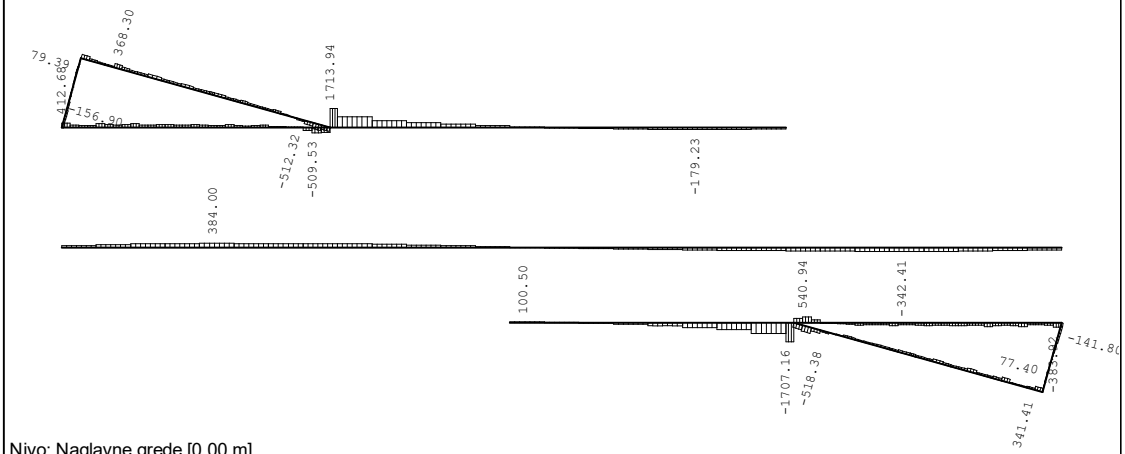
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 51.37 / min T2= -35.12 kN

Opt. 10: voz ispod



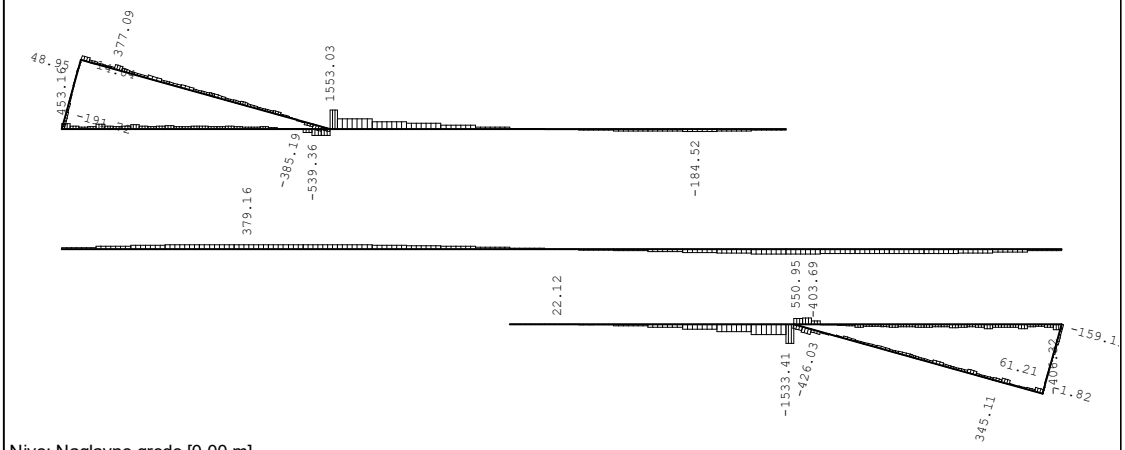
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 172.09 / min T2= -136.17 kN

Opt. 11: komb temp 1



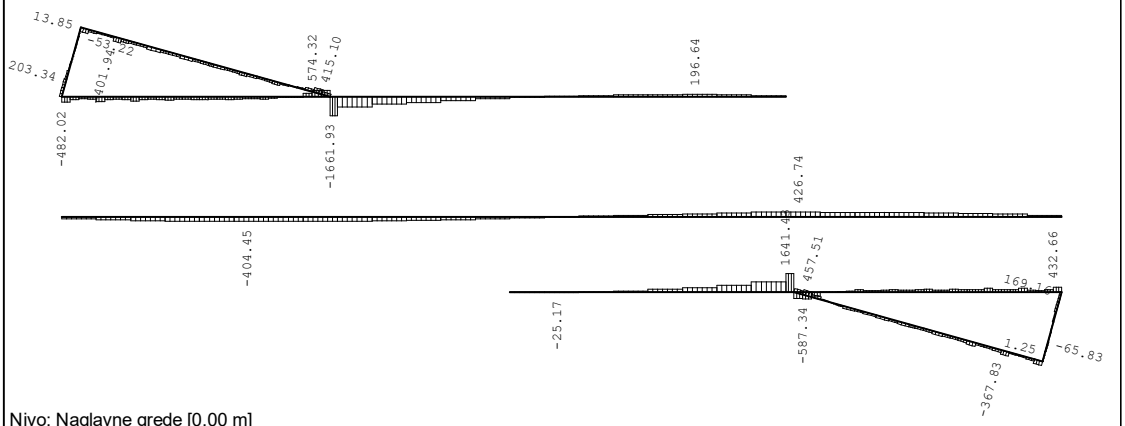
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1713.94 / min T2= -1707.16 kN

Opt. 12: komb temp 2



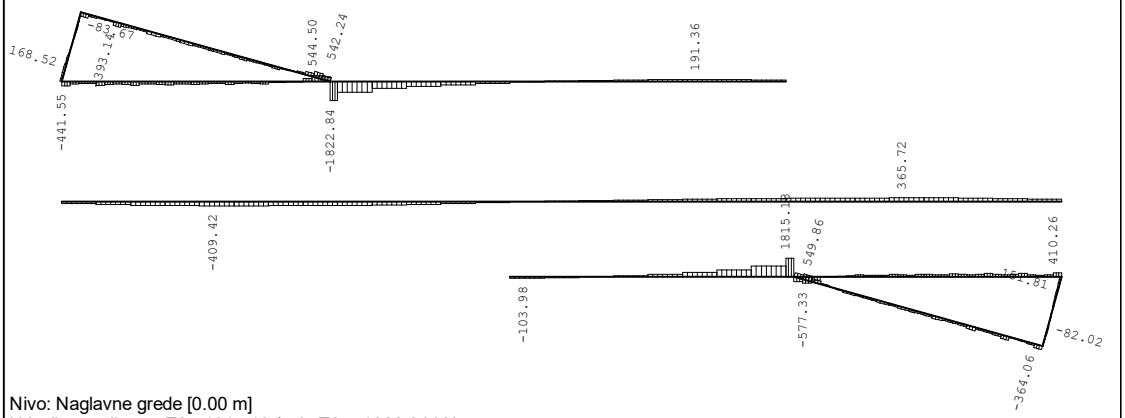
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1553.03 / min T2= -1533.41 kN

Opt. 13: komb temp 3



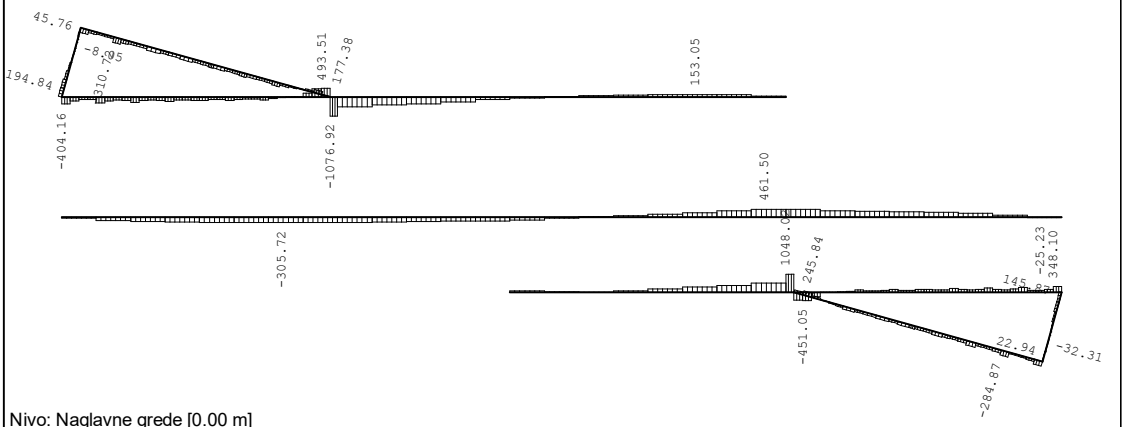
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1641.43 / min T2= -1661.93 kN

Opt. 14: komb temp 4



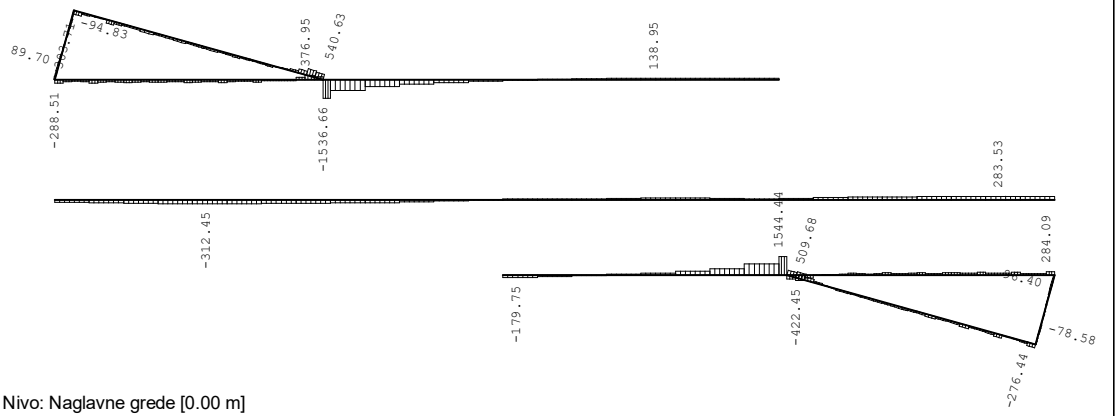
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1815.18 / min T2= -1822.84 kN

Opt. 15: komb temp 5



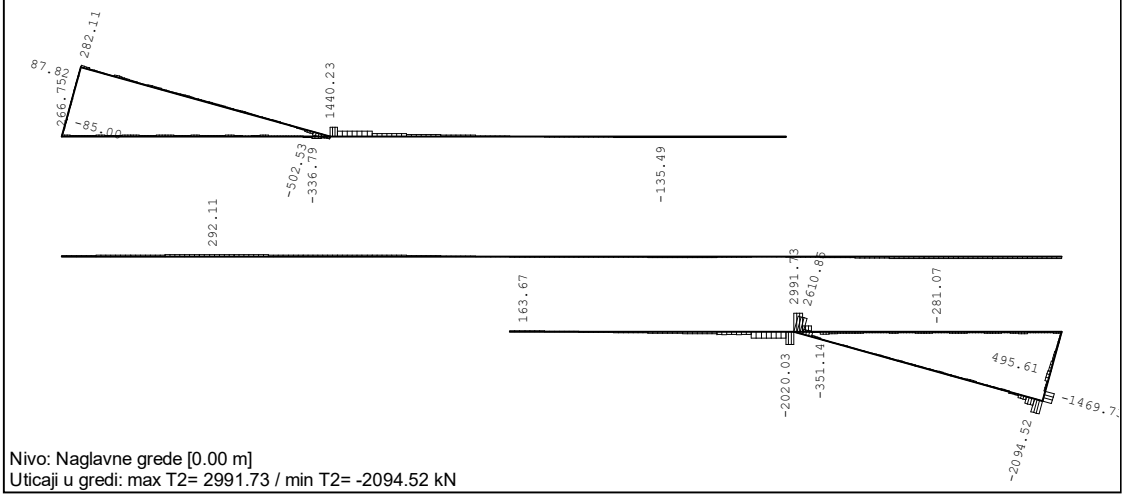
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1048.02 / min T2= -1076.92 kN

Opt. 16: komb temp 6



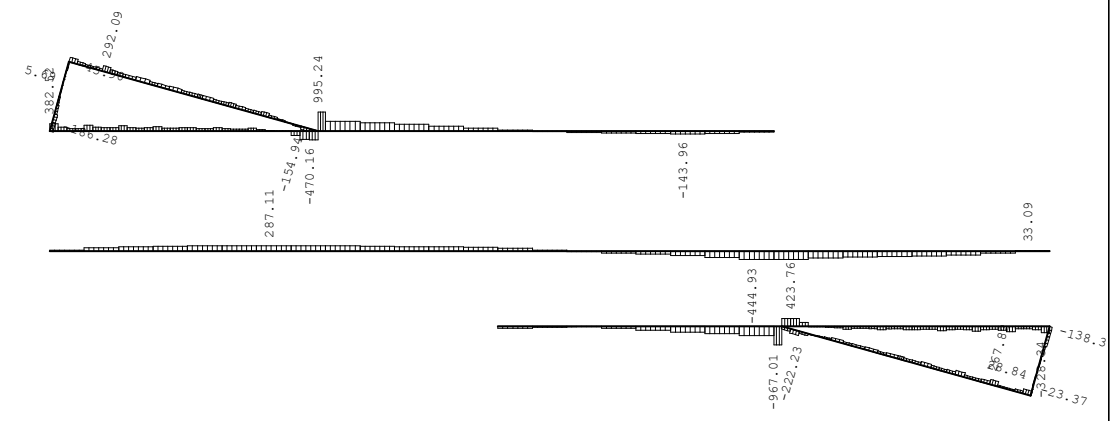
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1544.44 / min T2= -1536.66 kN

Opt. 17: komb temp 7



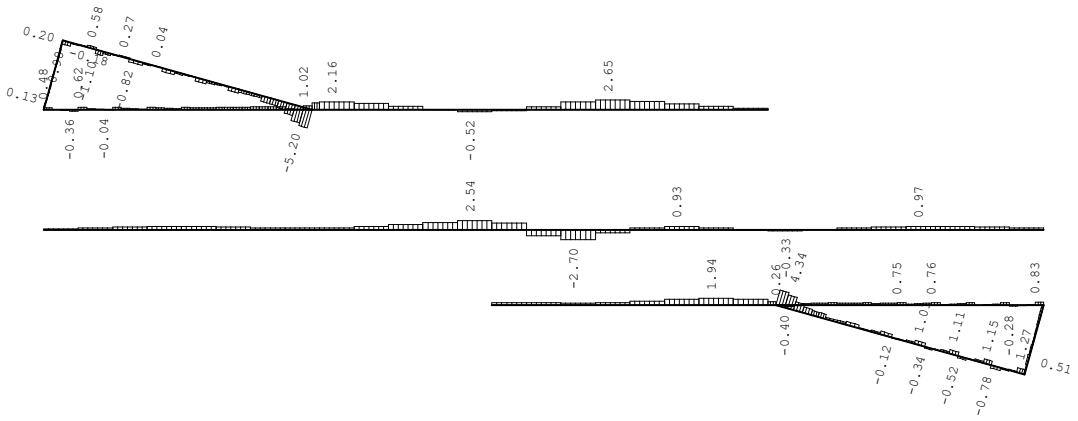
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 2991.73 / min T2= -2094.52 kN

Opt. 18: komb temp 8



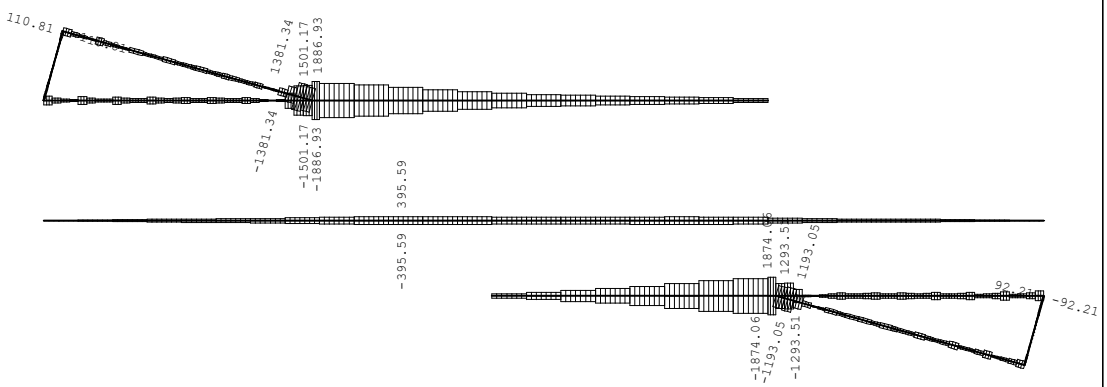
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 995.24 / min T2= -967.01 kN

Opt. 19: BU



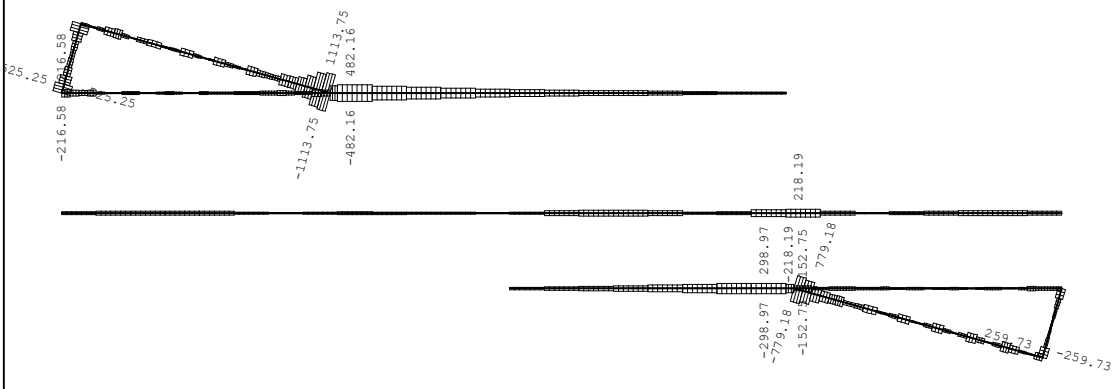
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 4.34 / min T2= -5.20 kN

Opt. 20: Sx



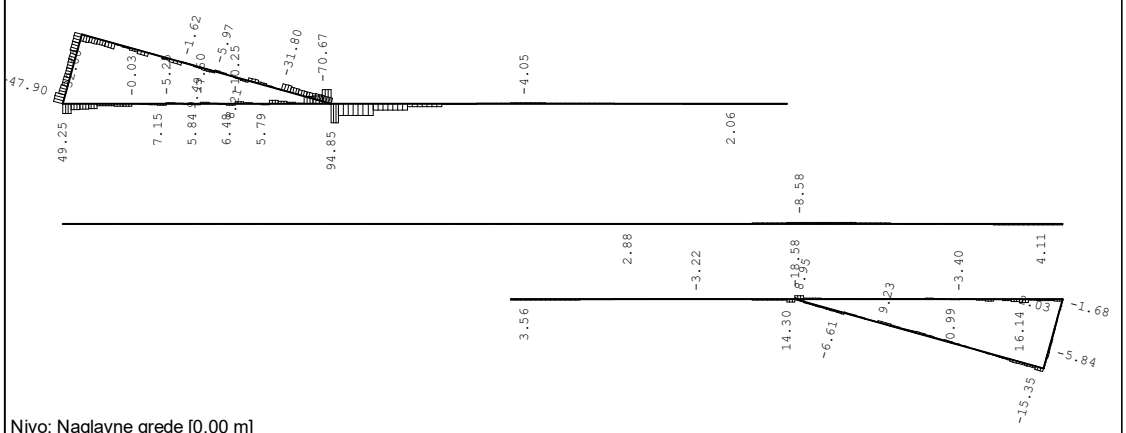
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1886.93 / min T2= -1886.93 kN

Opt. 21: Sy



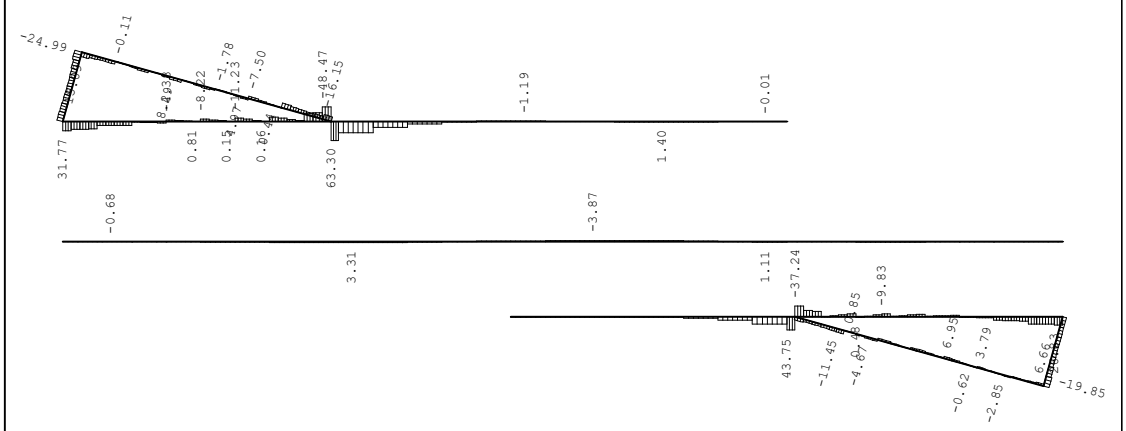
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T2= 1113.75 / min T2= -1113.75 kN

Opt. 1: sopstvena tezina (g)



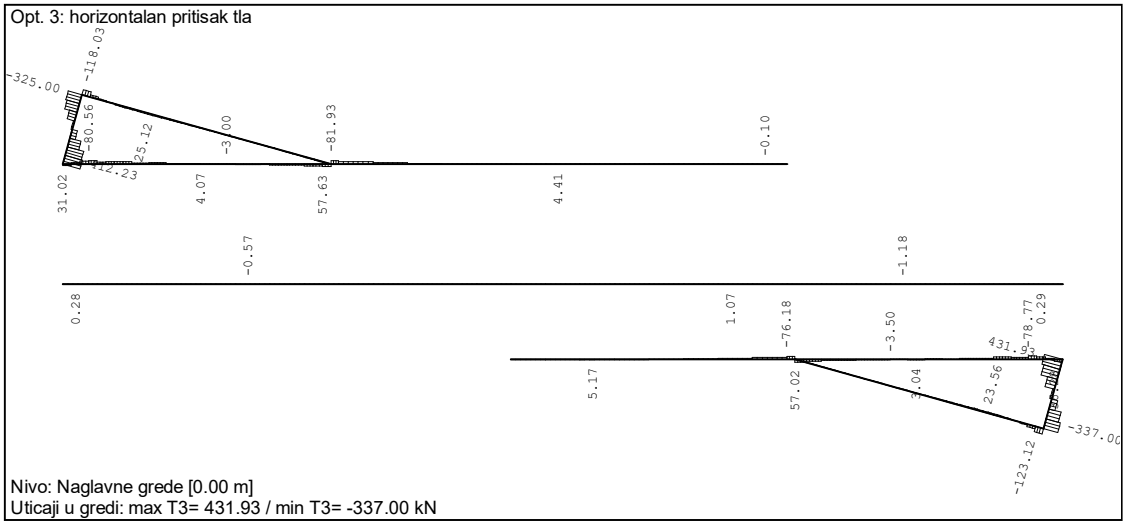
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 94.85 / min T3= -70.67 kN

Opt. 2: mrtav teret (Δg)



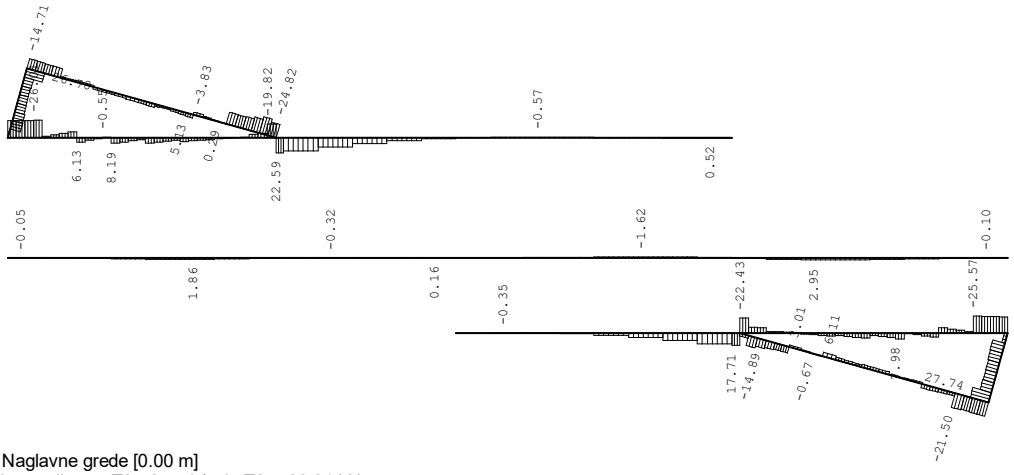
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 63.30 / min T3= -48.47 kN

Opt. 3: horizontalan pritisak tla



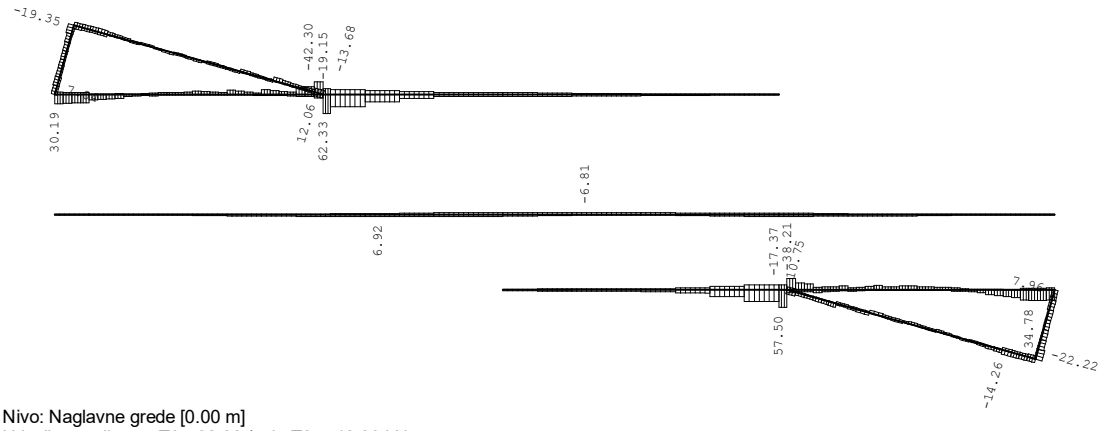
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 431.93 / min T3= -337.00 kN

Opt. 4: skupljanje



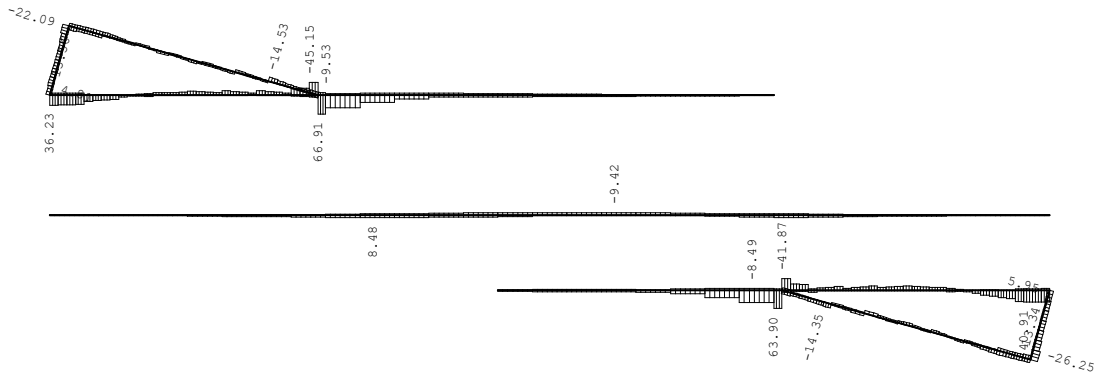
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 27.74 / min T3= -26.01 kN

Opt. 5: LM71



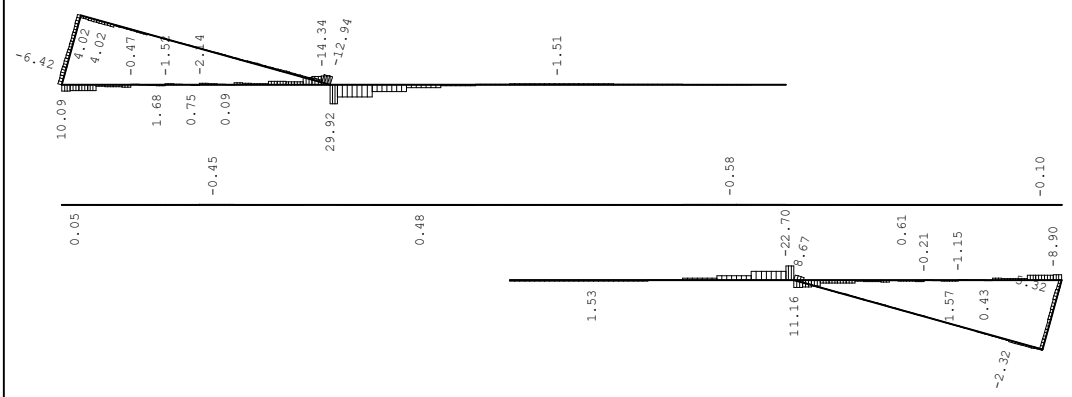
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 62.33 / min T3= -42.30 kN

Opt. 6: SW/2



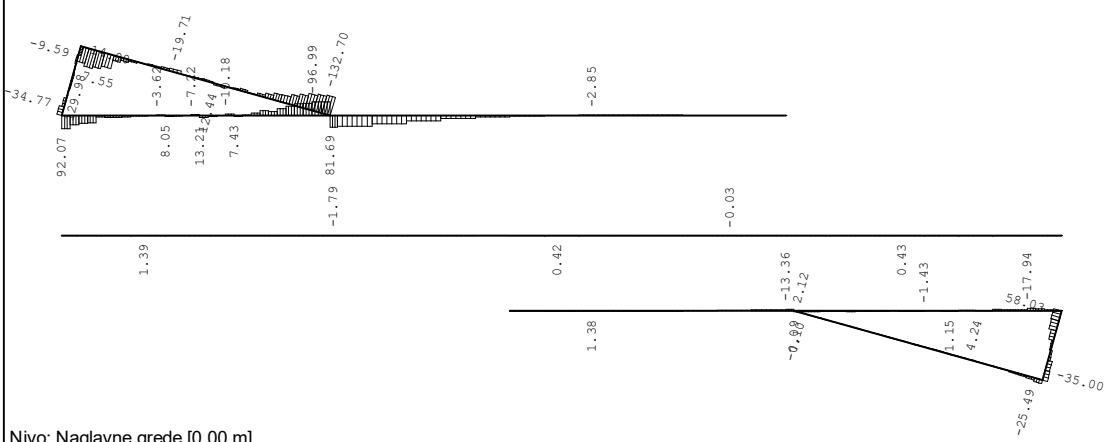
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 66.91 / min T3= -45.15 kN

Opt. 7: KP



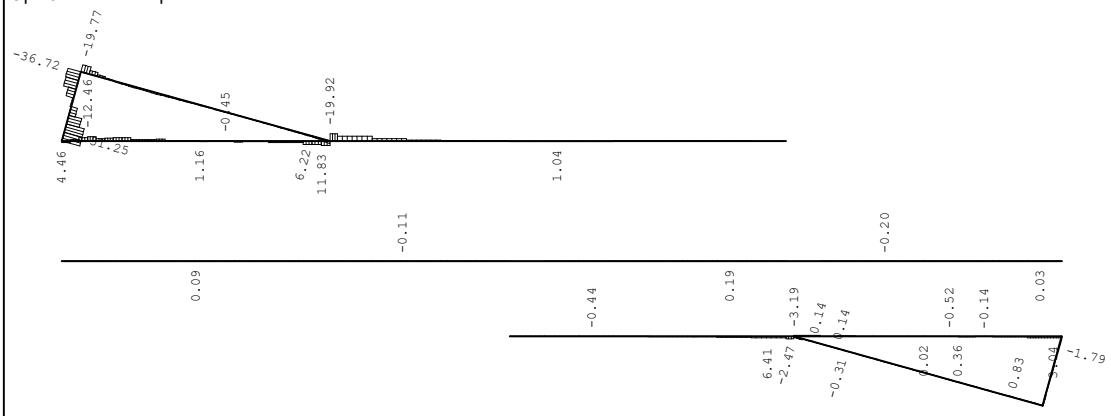
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 29.92 / min T3= -22.70 kN

Opt. 8: voz na nasipu ispred



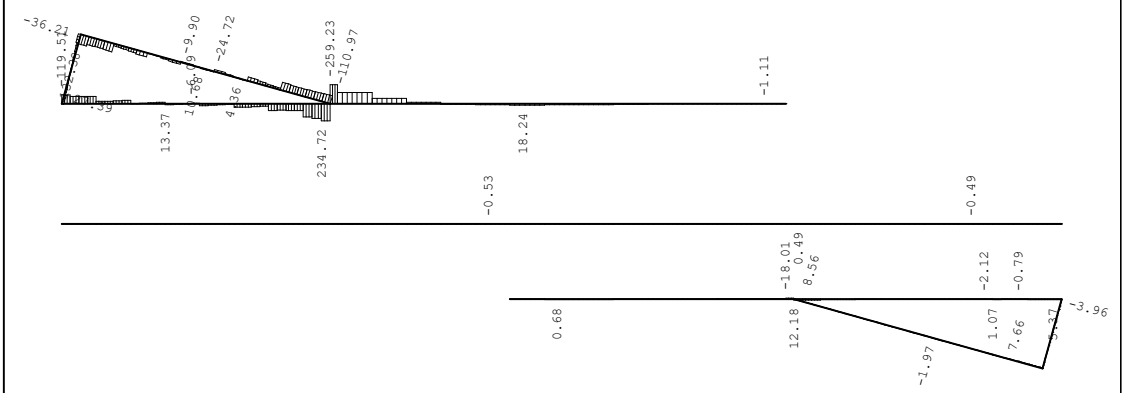
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 129.98 / min T3= -132.70 kN

Opt. 9: voz na nasipu iza



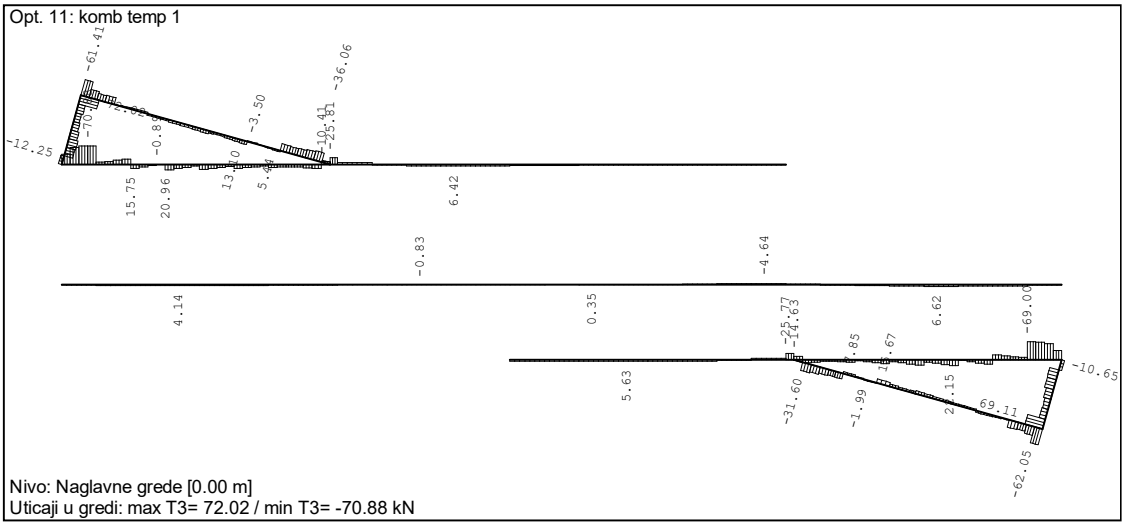
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 51.25 / min T3= -36.72 kN

Opt. 10: voz ispod



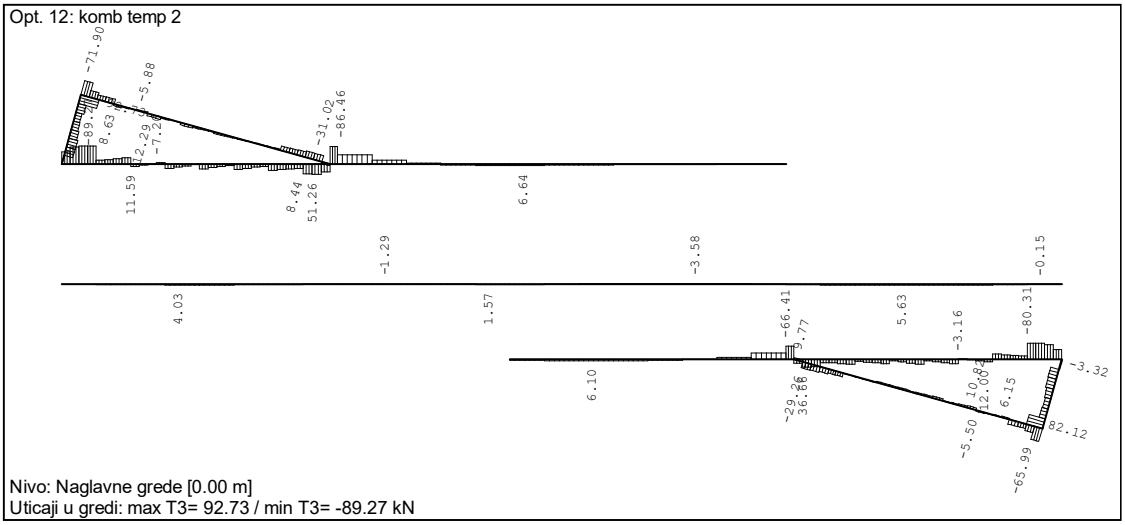
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 234.72 / min T3= -259.23 kN

Opt. 11: komb temp 1



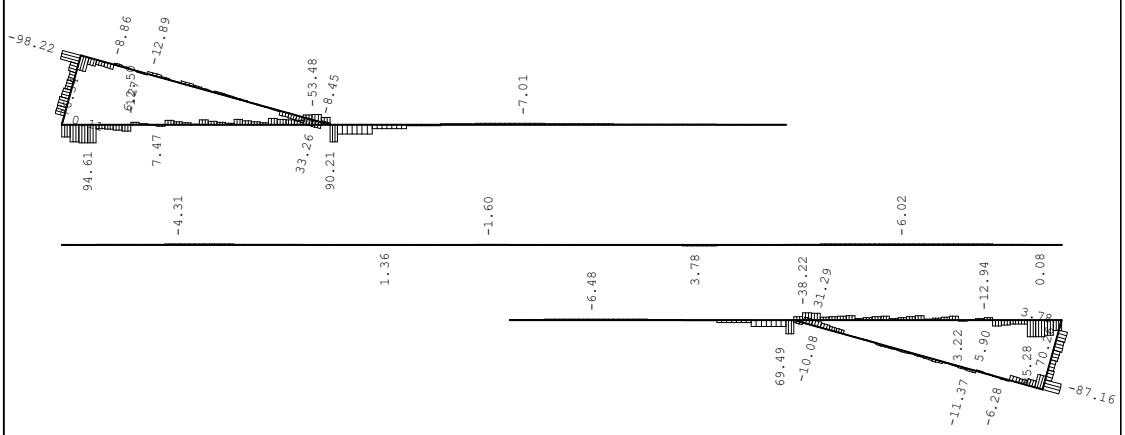
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 72.02 / min T3= -70.88 kN

Opt. 12: komb temp 2



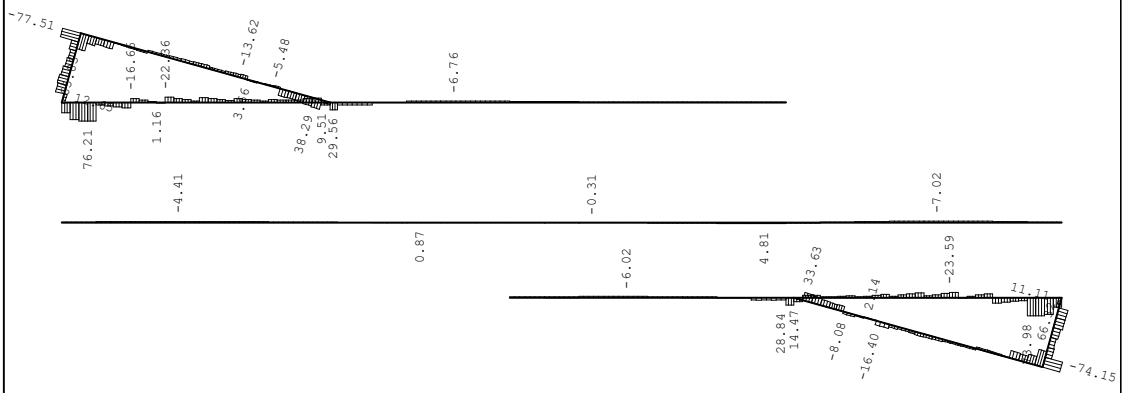
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 92.73 / min T3= -89.27 kN

Opt. 13: komb temp 3



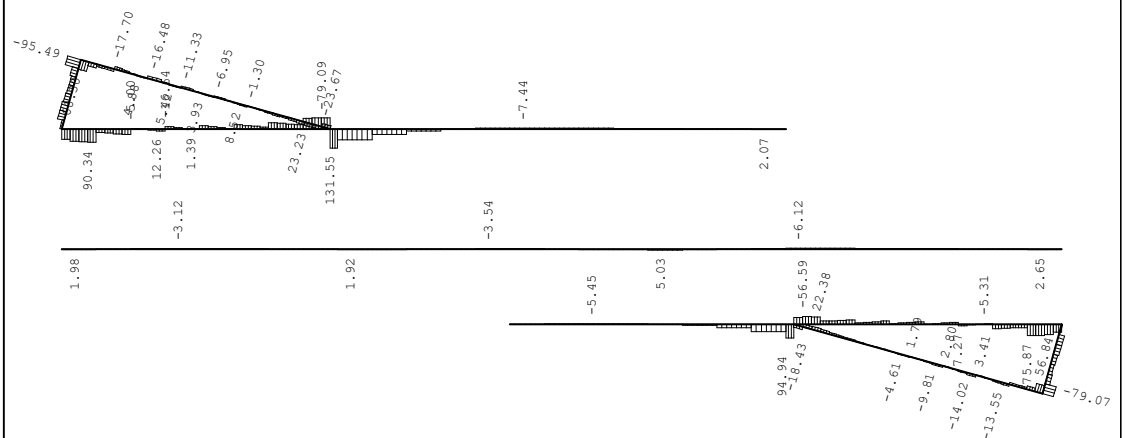
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 94.61 / min T3= -98.22 kN

Opt. 14: komb temp 4



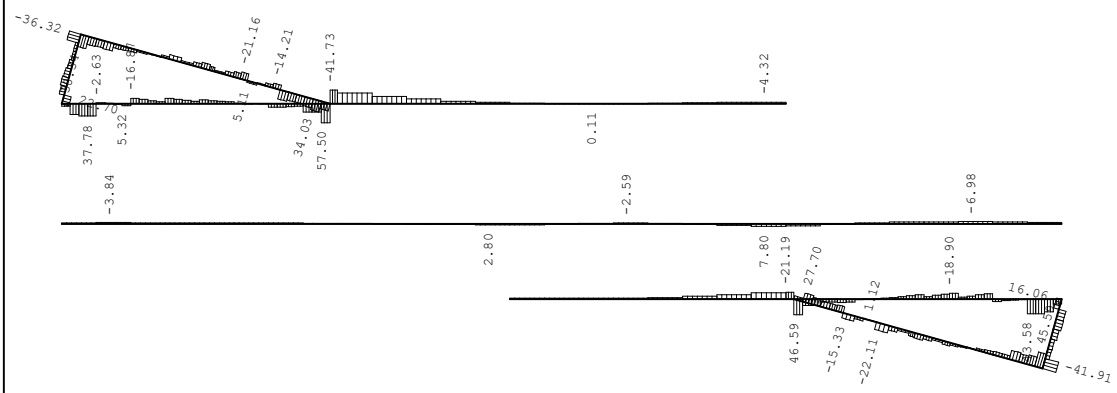
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 76.21 / min T3= -77.51 kN

Opt. 15: komb temp 5



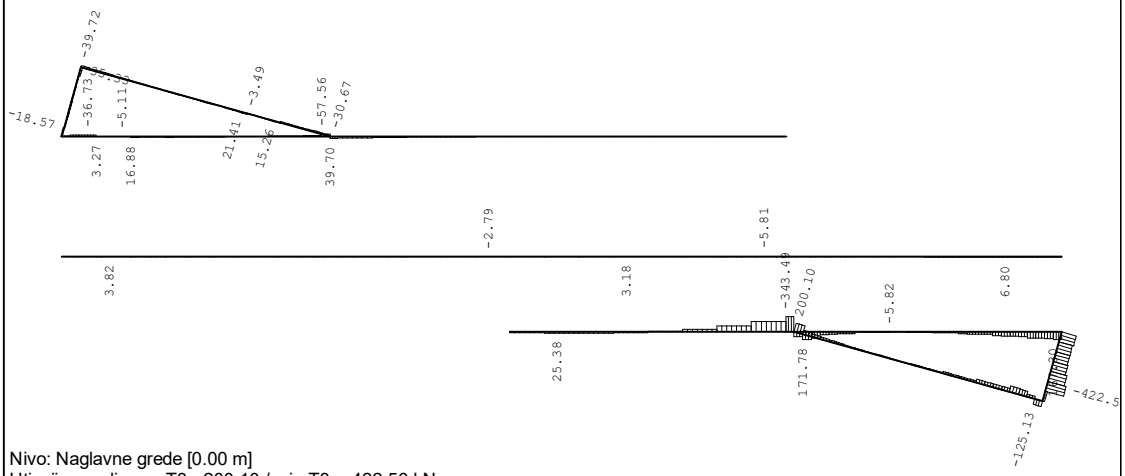
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 131.55 / min T3= -95.49 kN

Opt. 16: komb temp 6



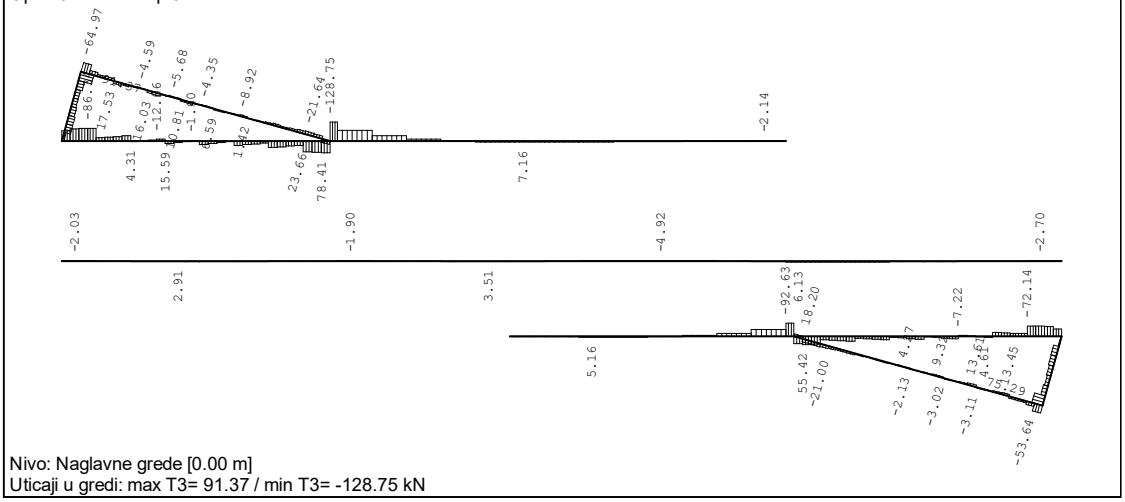
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 57.50 / min T3= -41.91 kN

Opt. 17: komb temp 7



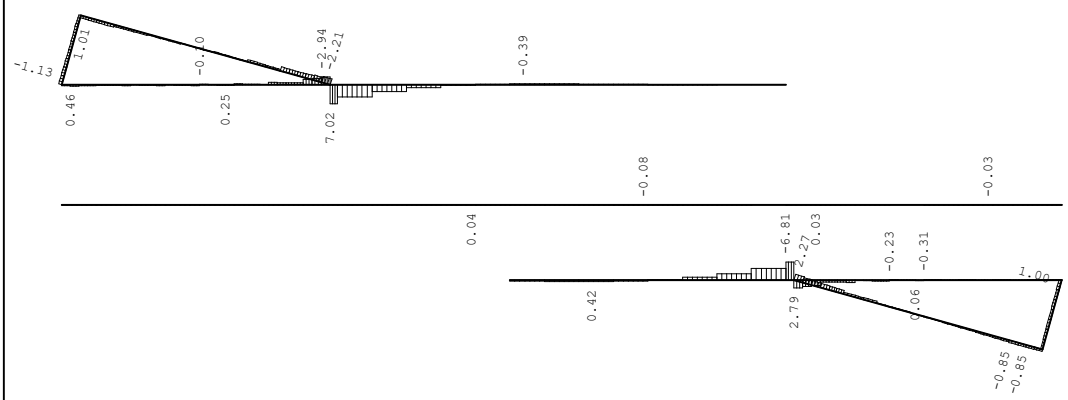
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 200.10 / min T3= -422.56 kN

Opt. 18: komb temp 8



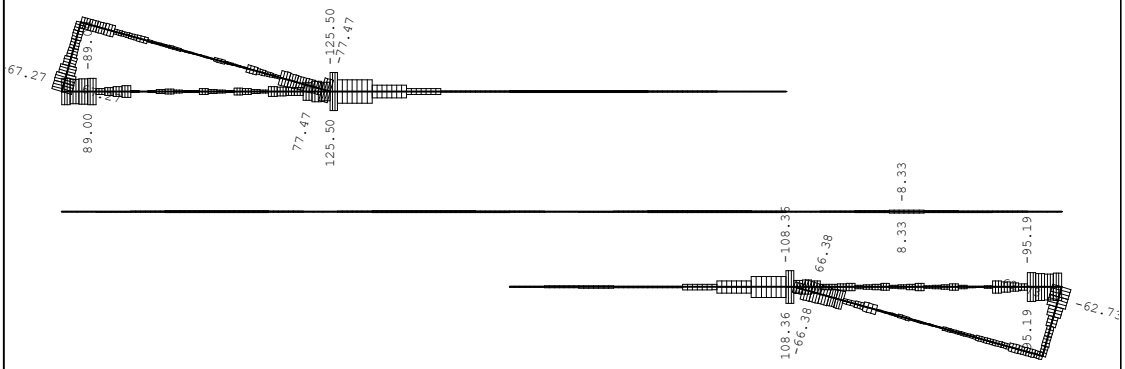
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 91.37 / min T3= -128.75 kN

Opt. 19: BU



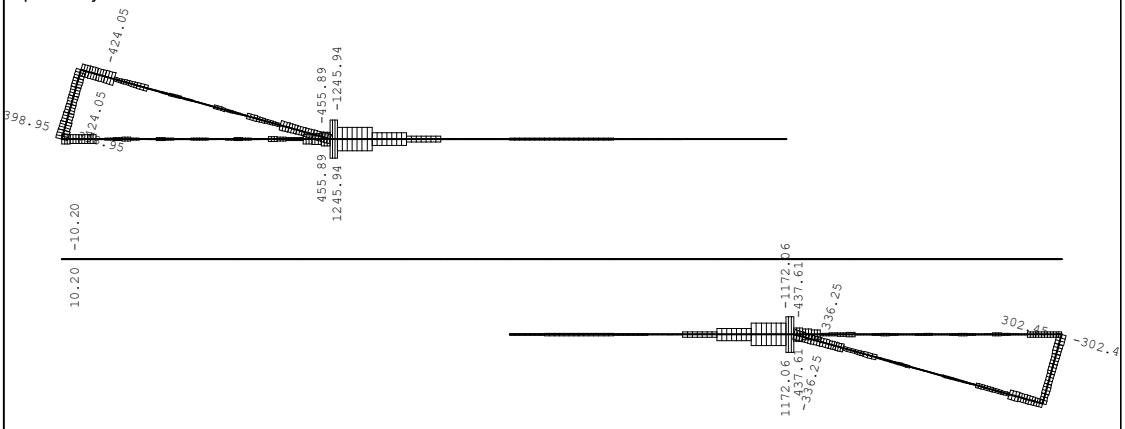
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 7.02 / min T3= -6.81 kN

Opt. 20: Sx



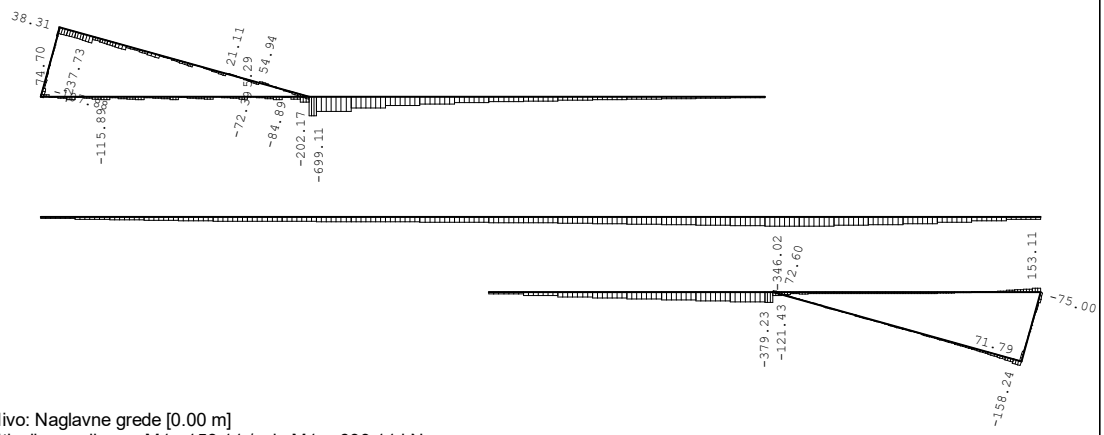
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 125.50 / min T3= -125.50 kN

Opt. 21: Sy



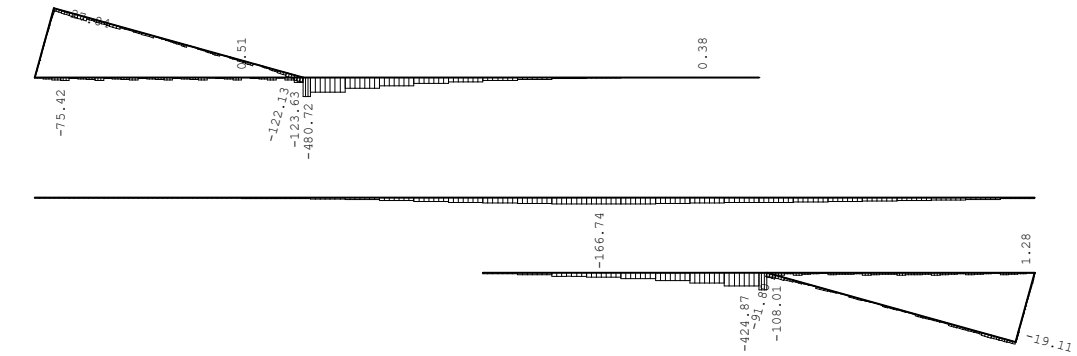
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max T3= 1245.94 / min T3= -1245.94 kN

Opt. 1: sopstvena tezina (g)



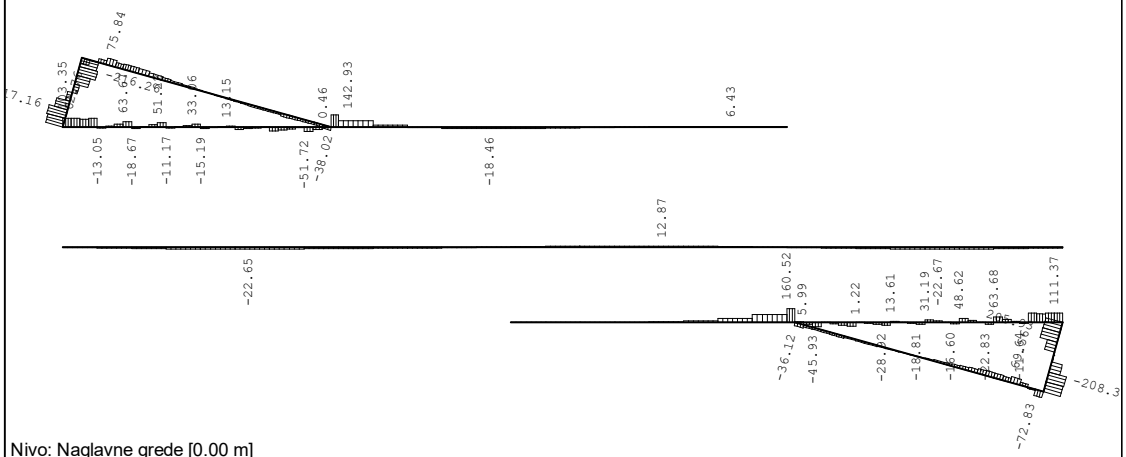
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 153.11 / min M1= -699.11 kNm

Opt. 2: mrtav teret (Δg)



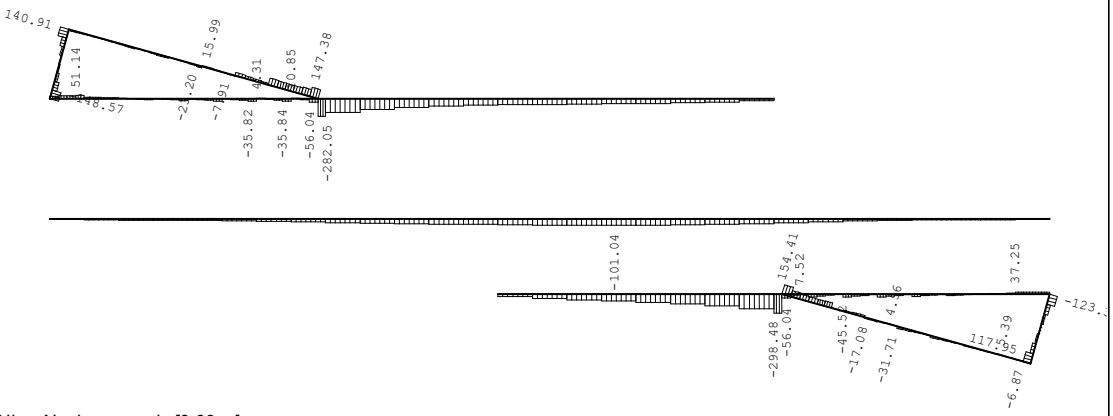
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 1.28 / min M1= -480.72 kNm

Opt. 3: horizontalan pritisak tla



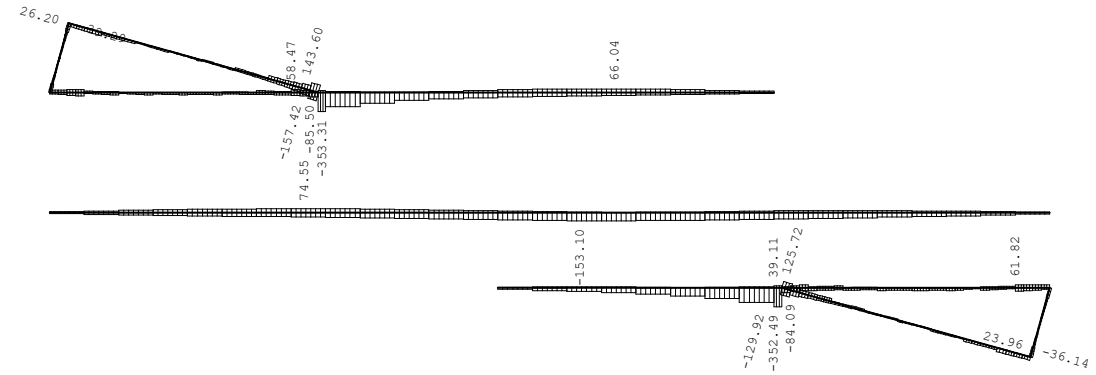
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 217.16 / min M1= -216.26 kNm

Opt. 4: skupljanje



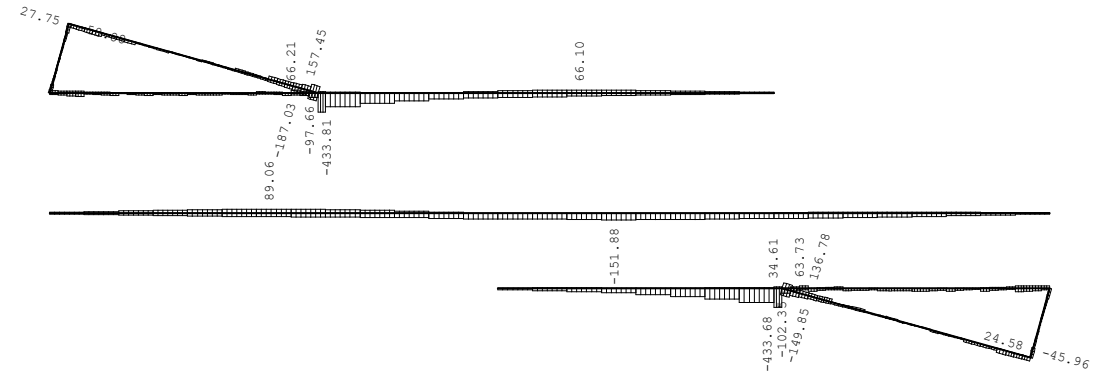
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 154.41 / min M1= -298.48 kNm

Opt. 5: LM71



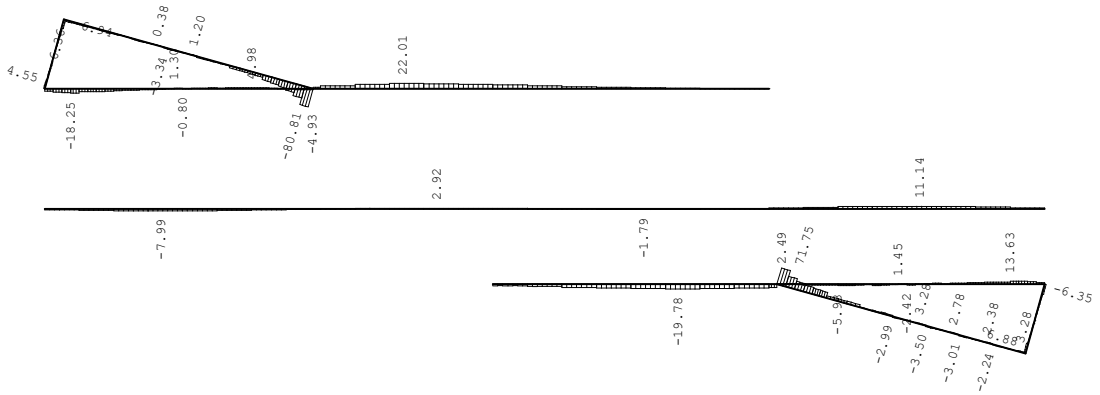
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 143.60 / min M1= -353.31 kNm

Opt. 6: SW/2



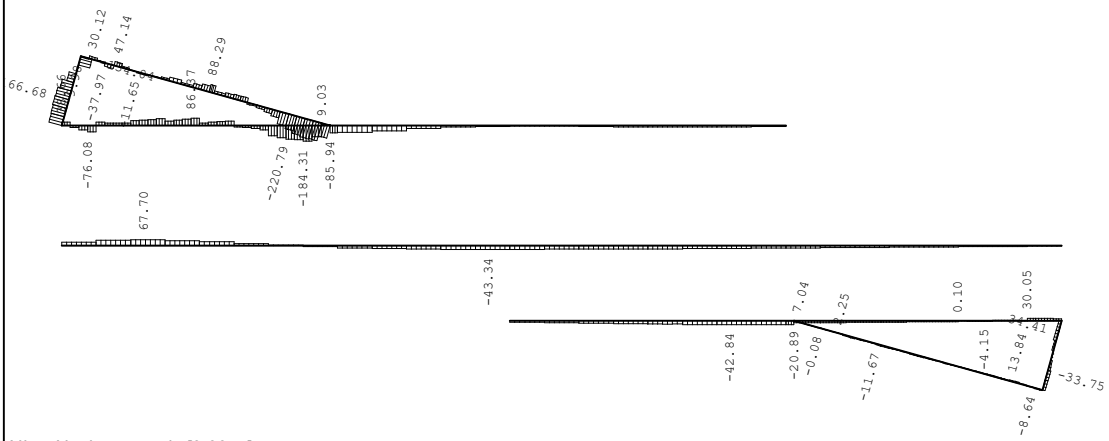
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 157.45 / min M1= -433.81 kNm

Opt. 7: KP



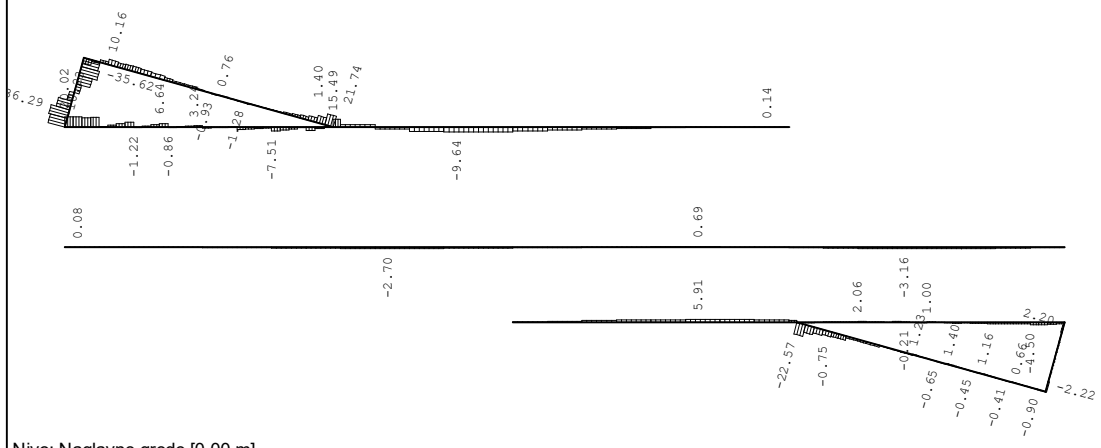
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 71.75 / min M1= -80.81 kNm

Opt. 8: voz na nasipu ispred



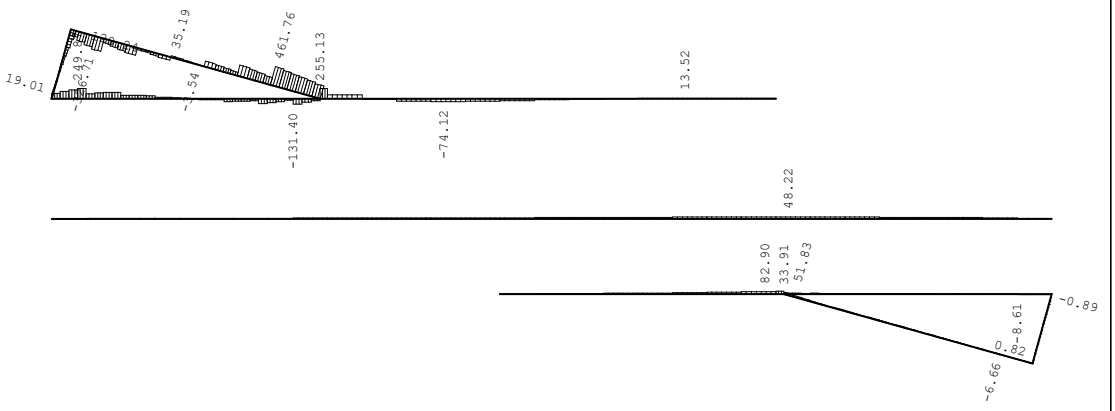
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 166.68 / min M1= -220.79 kNm

Opt. 9: voz na nasipu iza



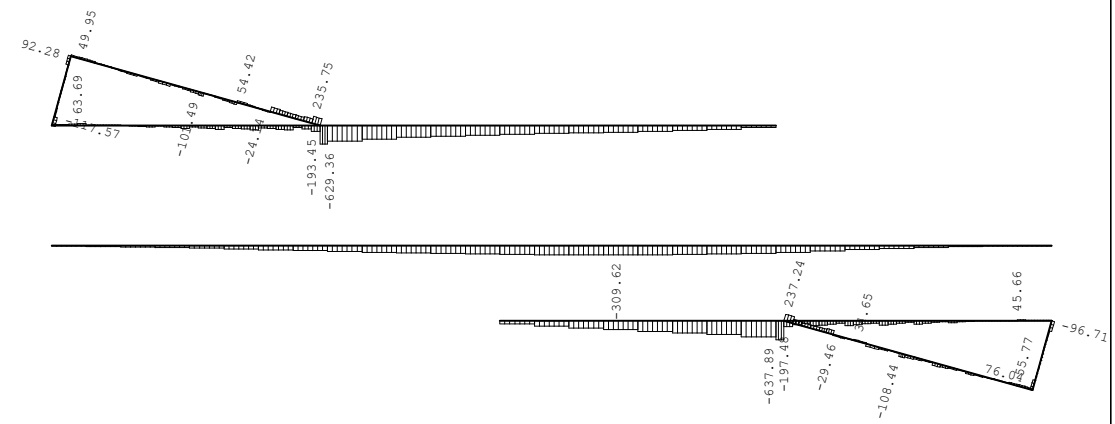
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 36.29 / min M1= -35.62 kNm

Opt. 10: voz ispod



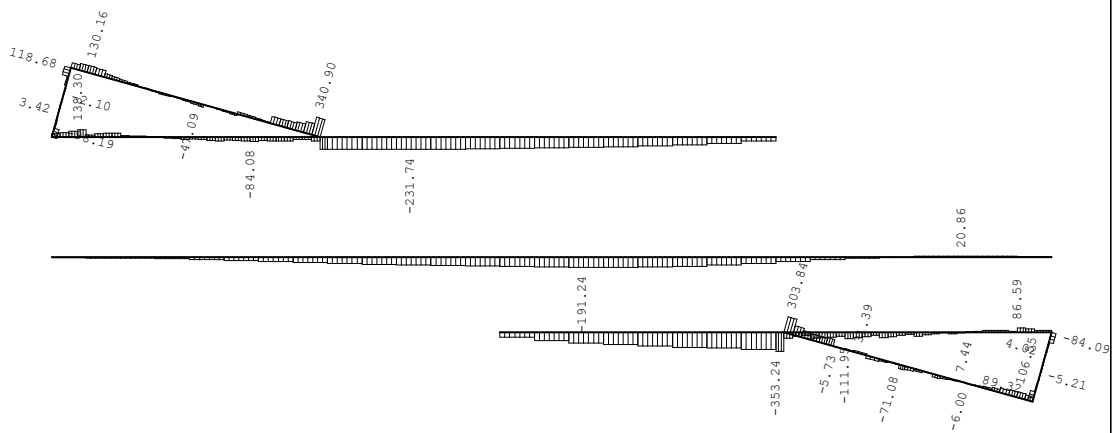
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 461.76 / min M1= -326.71 kNm

Opt. 11: komb temp 1



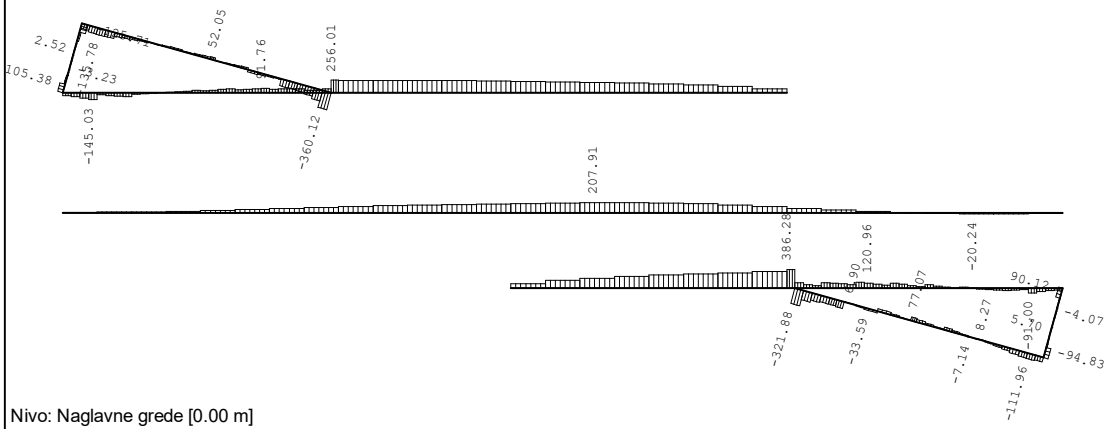
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 237.24 / min M1= -637.89 kNm

Opt. 12: komb temp 2



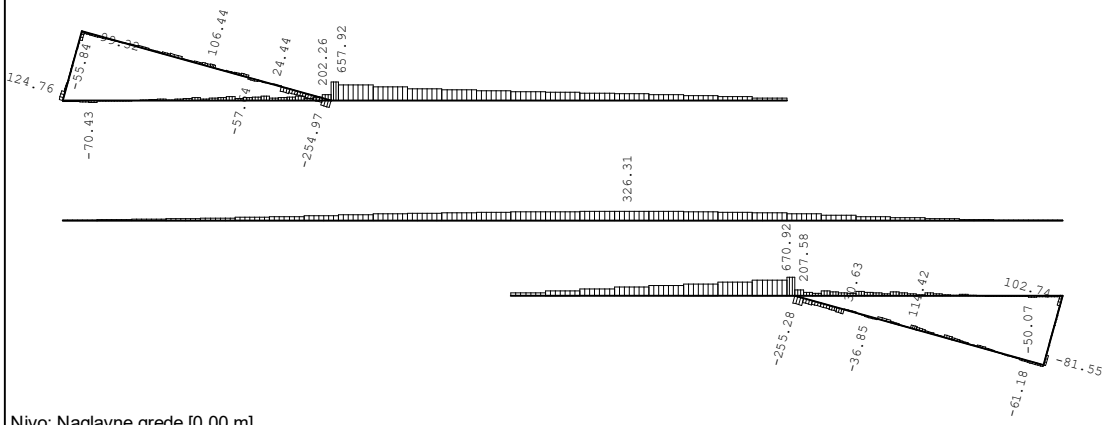
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 340.90 / min M1= -353.24 kNm

Opt. 13: komb temp 3



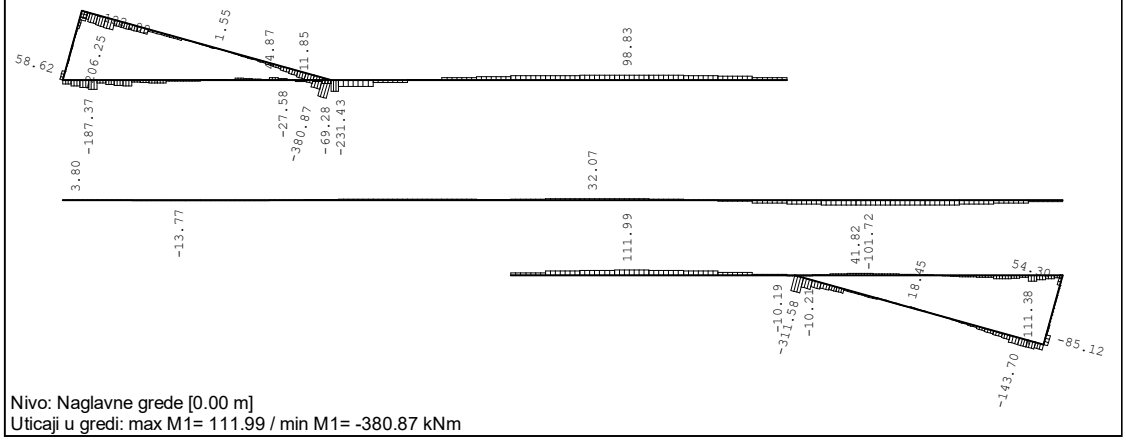
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 386.28 / min M1= -360.12 kNm

Opt. 14: komb temp 4



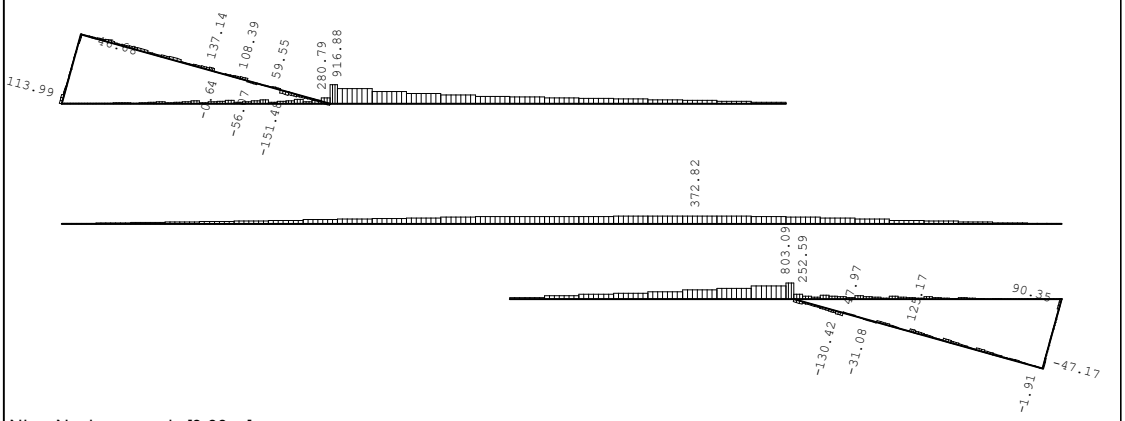
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 670.92 / min M1= -255.28 kNm

Opt. 15: komb temp 5



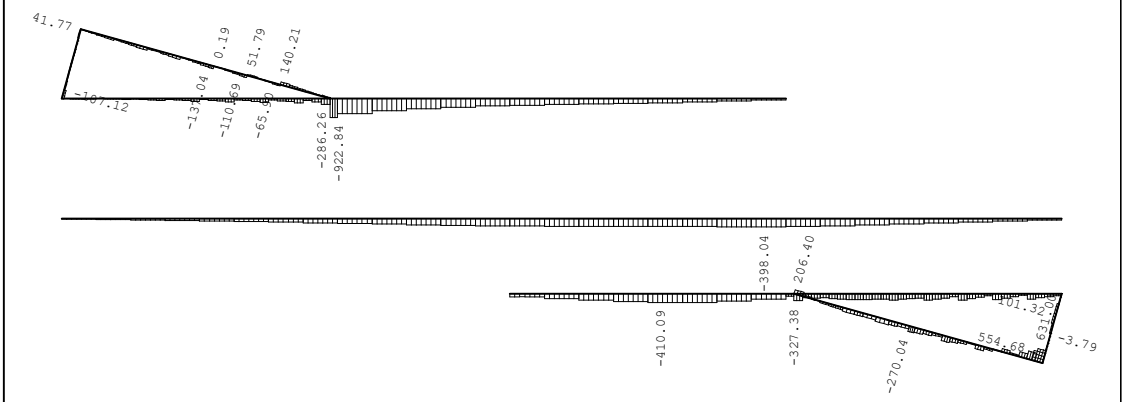
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 111.99 / min M1= -380.87 kNm

Opt. 16: komb temp 6



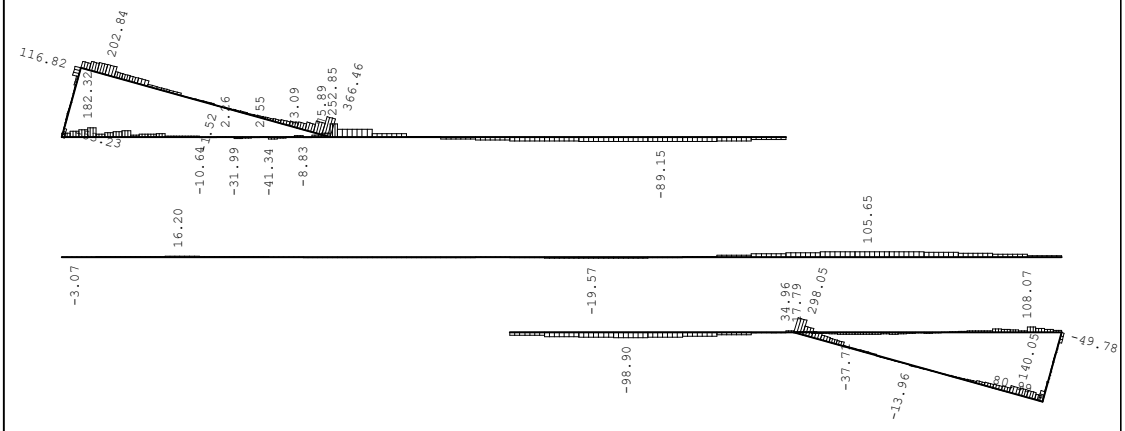
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 916.88 / min M1= -151.48 kNm

Opt. 17: komb temp 7



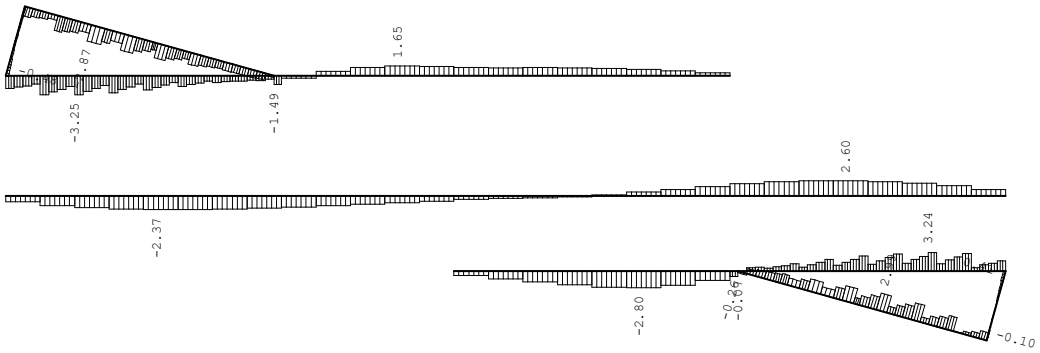
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 631.00 / min M1= -922.84 kNm

Opt. 18: komb temp 8



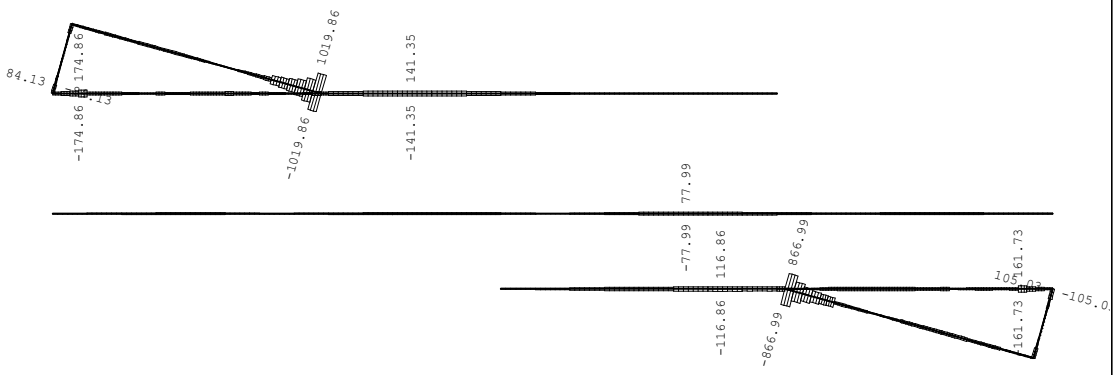
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 366.46 / min M1= -98.90 kNm

Opt. 19: BU



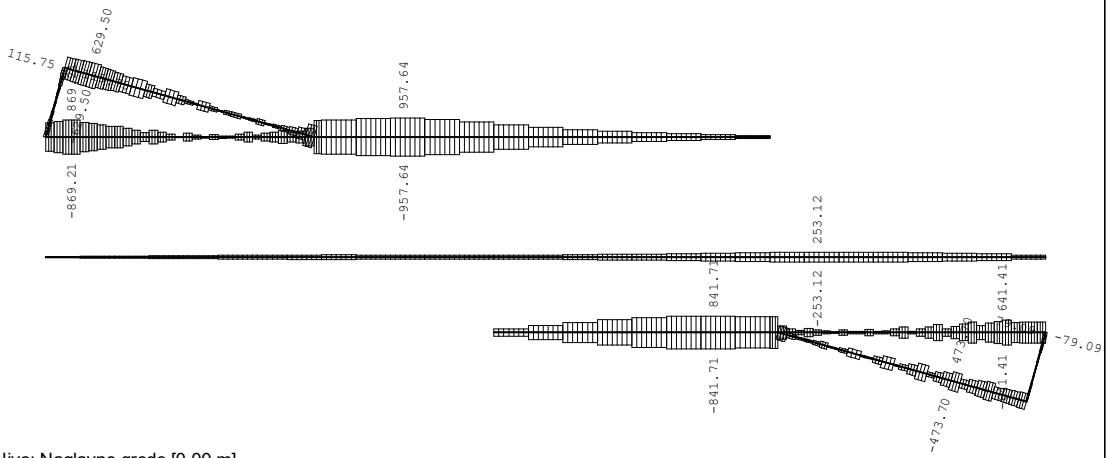
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 3.24 / min M1= -3.25 kNm

Opt. 20: Sx



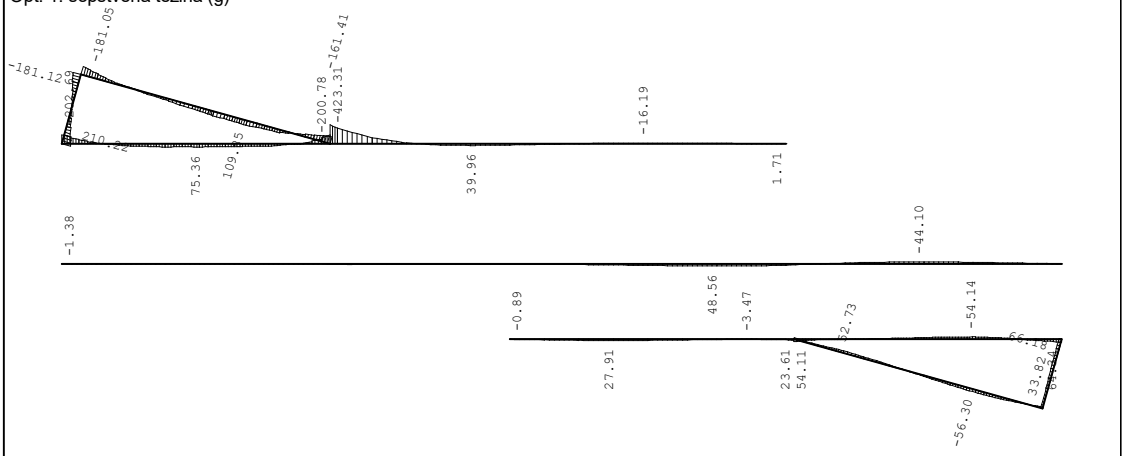
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 1019.86 / min M1= -1019.86 kNm

Opt. 21: Sy



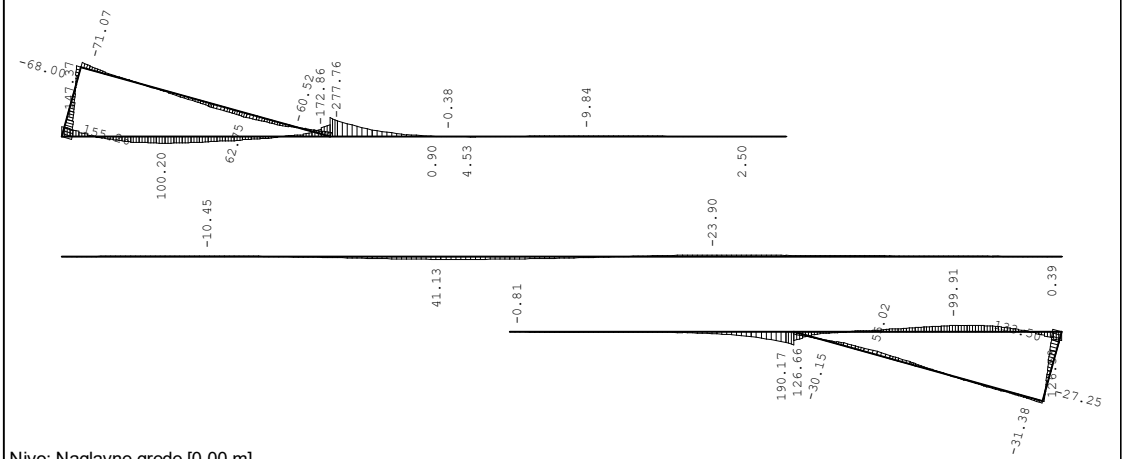
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M1= 957.64 / min M1= -957.64 kNm

Opt. 1: sopstvena tezina (g)



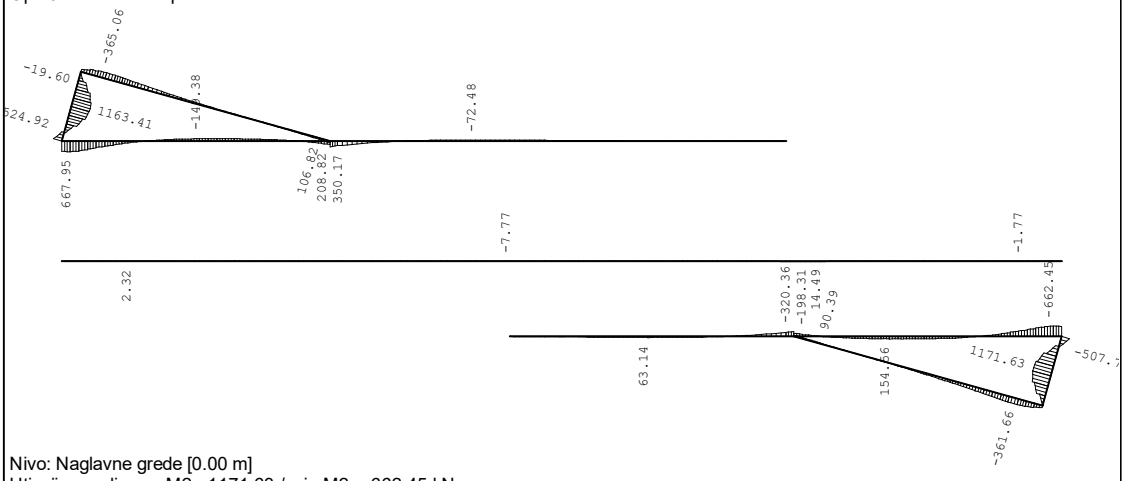
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 210.22 / min M2= -423.31 kNm

Opt. 2: mrtav teret (Δg)



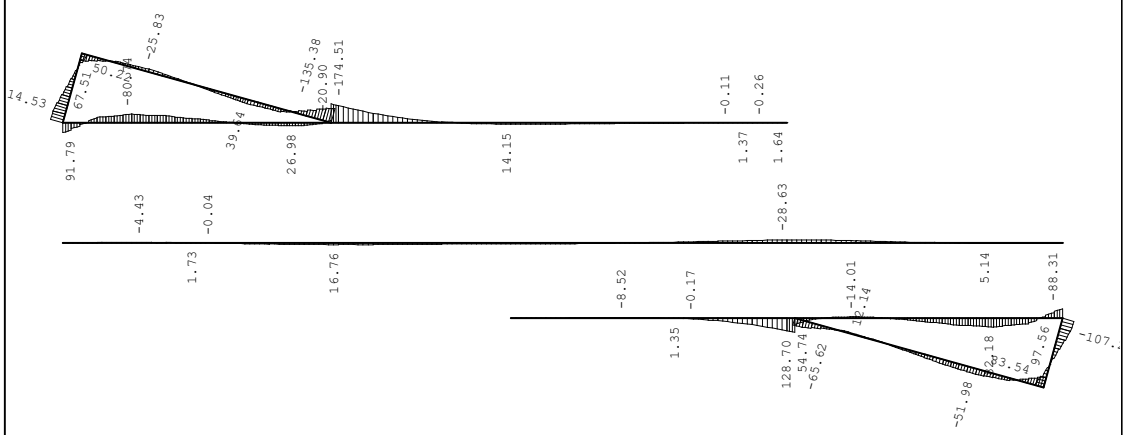
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 190.17 / min M2= -277.76 kNm

Opt. 3: horizontalan pritisak tla



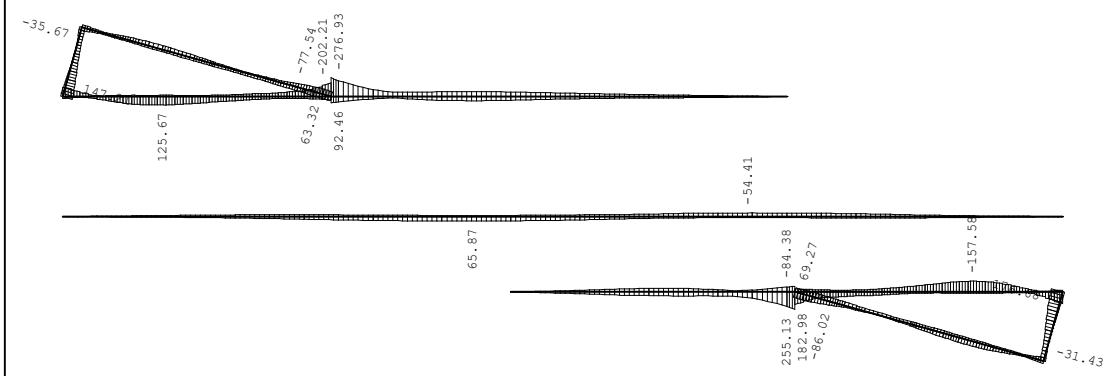
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 1171.63 / min M2= -662.45 kNm

Opt. 4: skupljanje



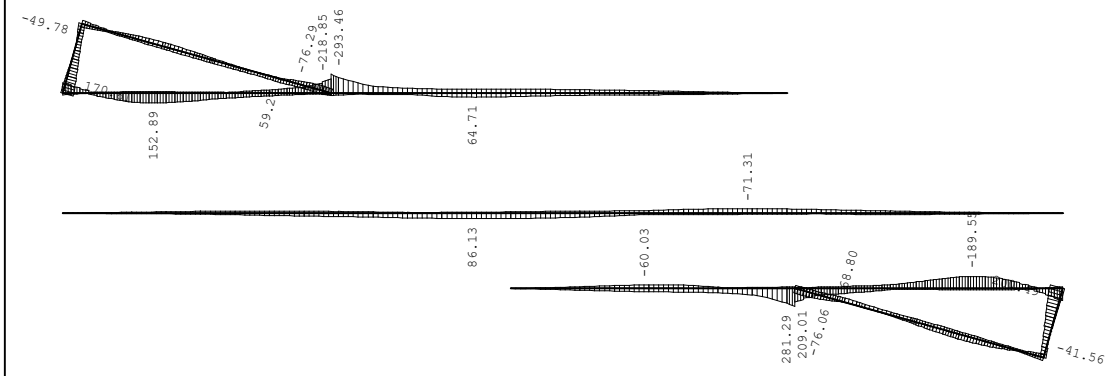
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 128.70 / min M2= -174.51 kNm

Opt. 5: LM71



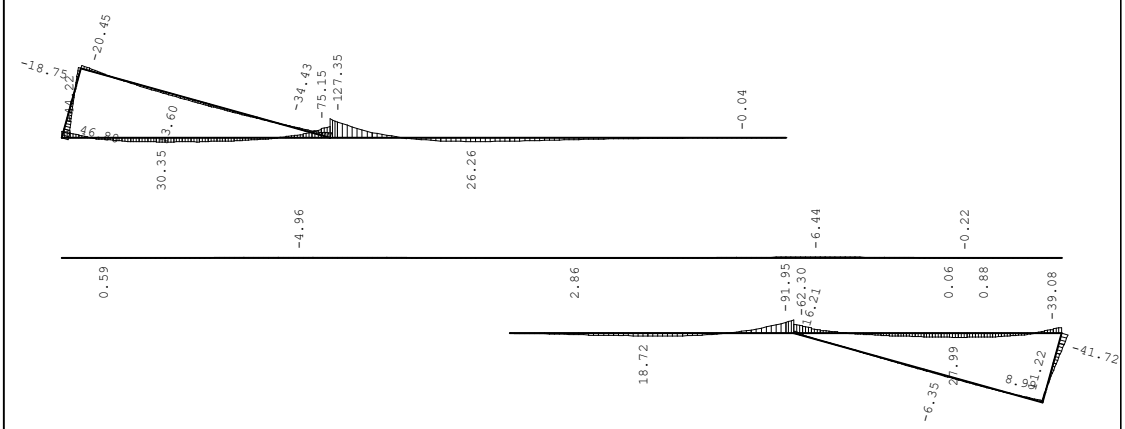
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 255.13 / min M2= -276.93 kNm

Opt. 6: SW/2



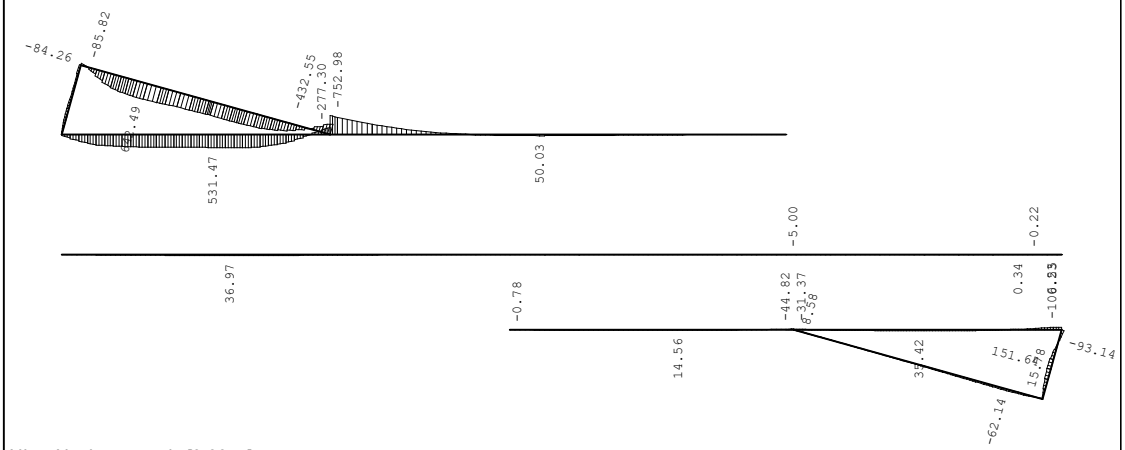
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 281.29 / min M2= -293.46 kNm

Opt. 7: KP



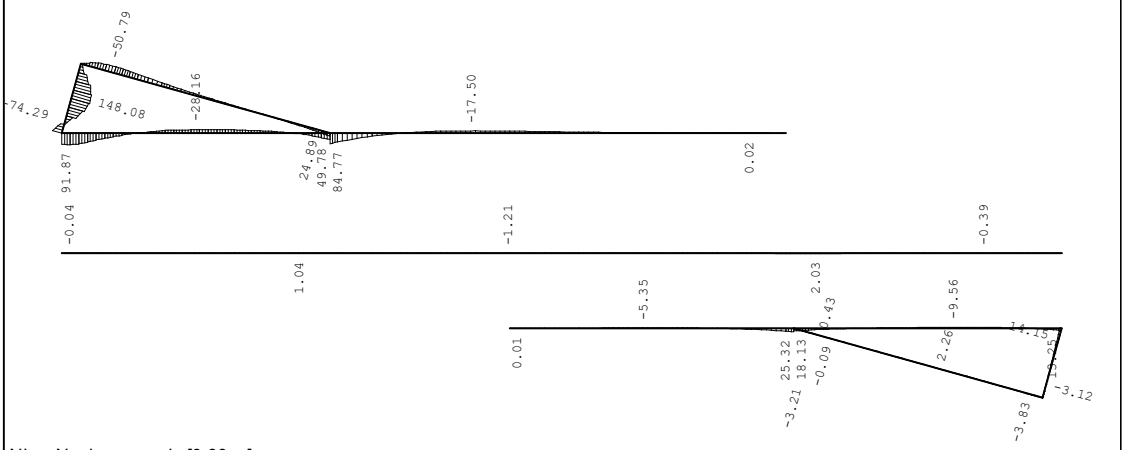
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 46.80 / min M2= -127.35 kNm

Opt. 8: voz na nasipu ispred

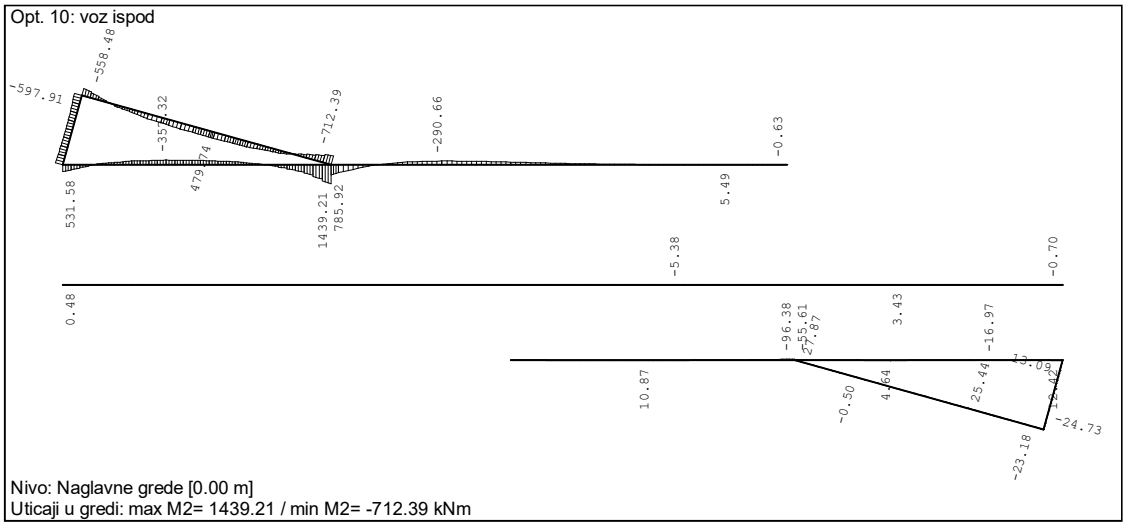


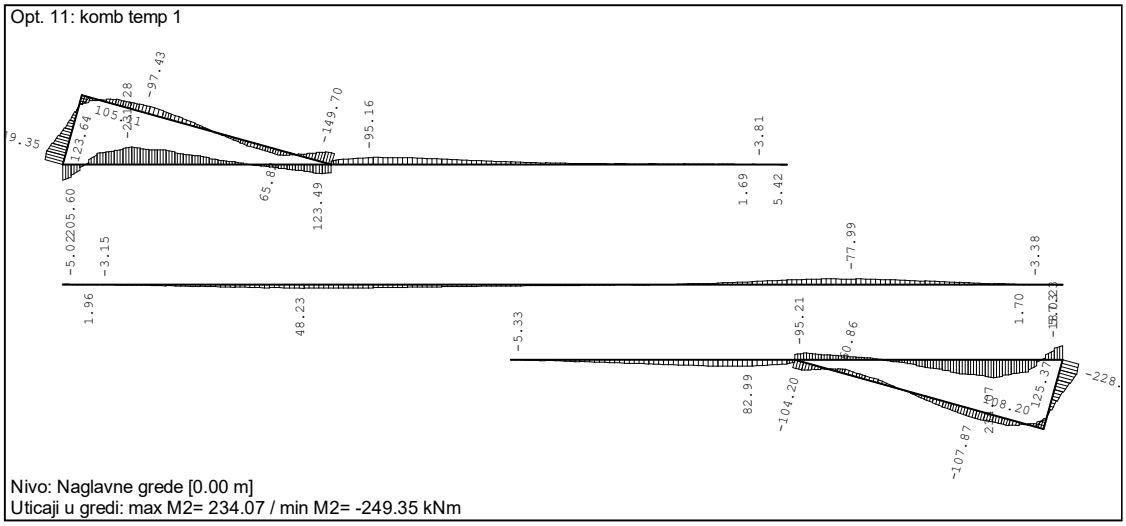
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 642.49 / min M2= -752.98 kNm

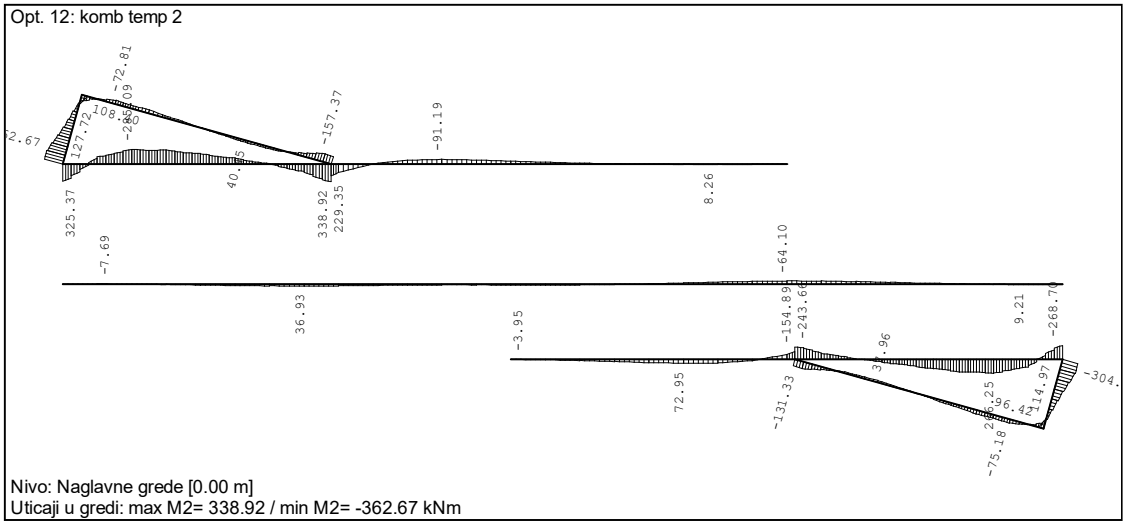
Opt. 9: voz na nasipu iza

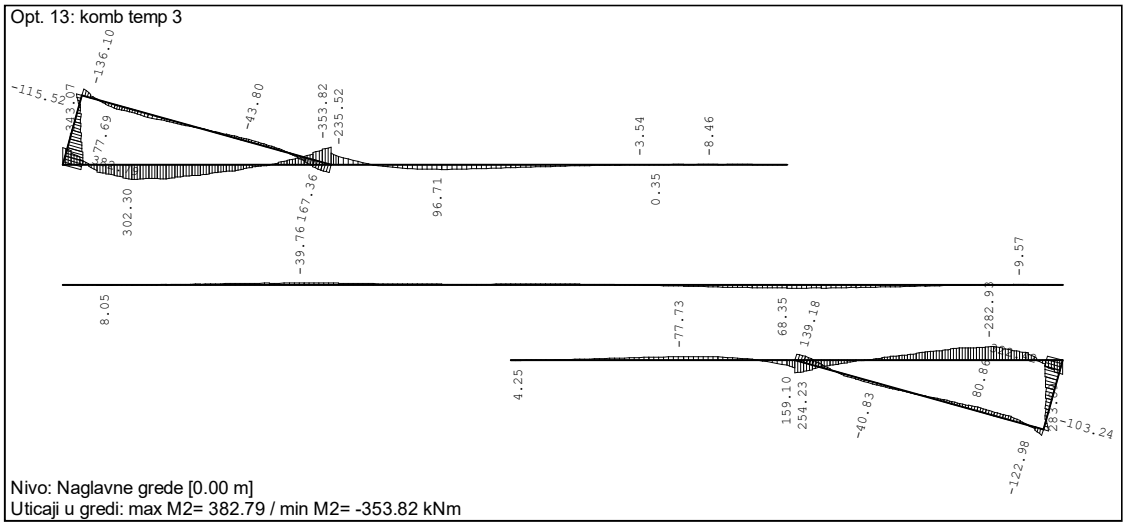


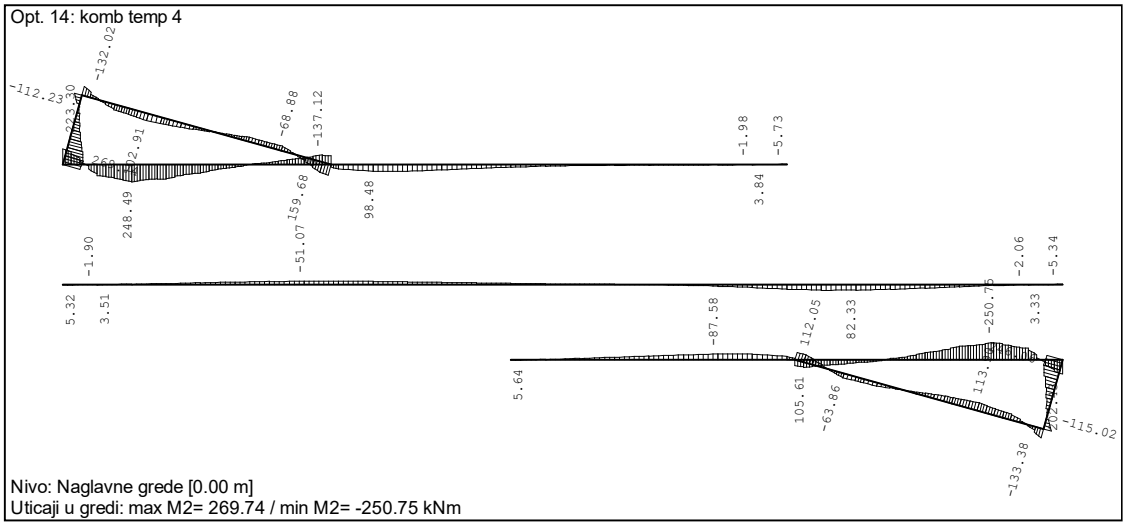
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 148.08 / min M2= -74.29 kNm

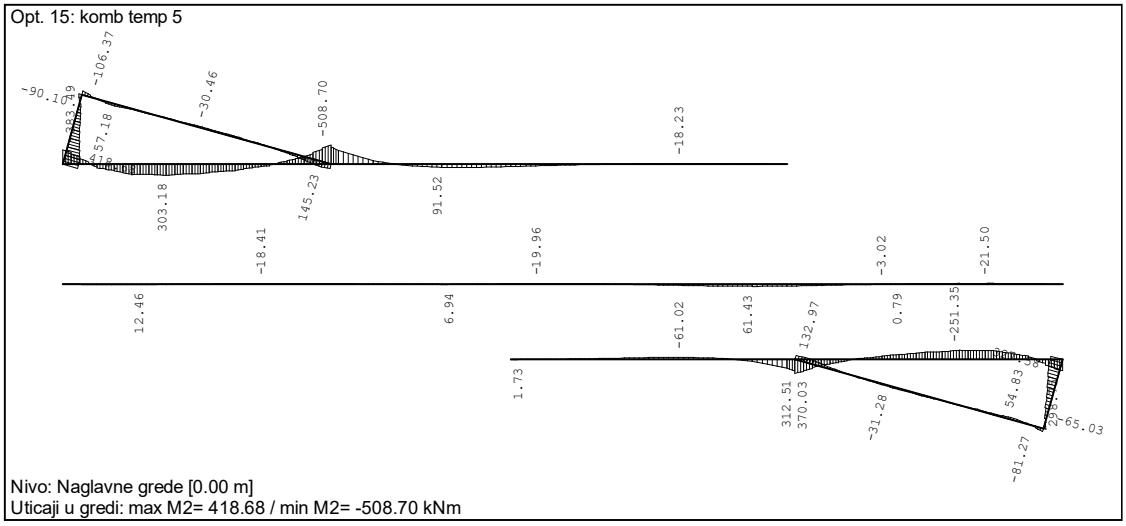

Opt. 10: voz ispod
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 1439.21 / min M2= -712.39 kNm


Opt. 11: komb temp 1
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 234.07 / min M2= -249.35 kNm

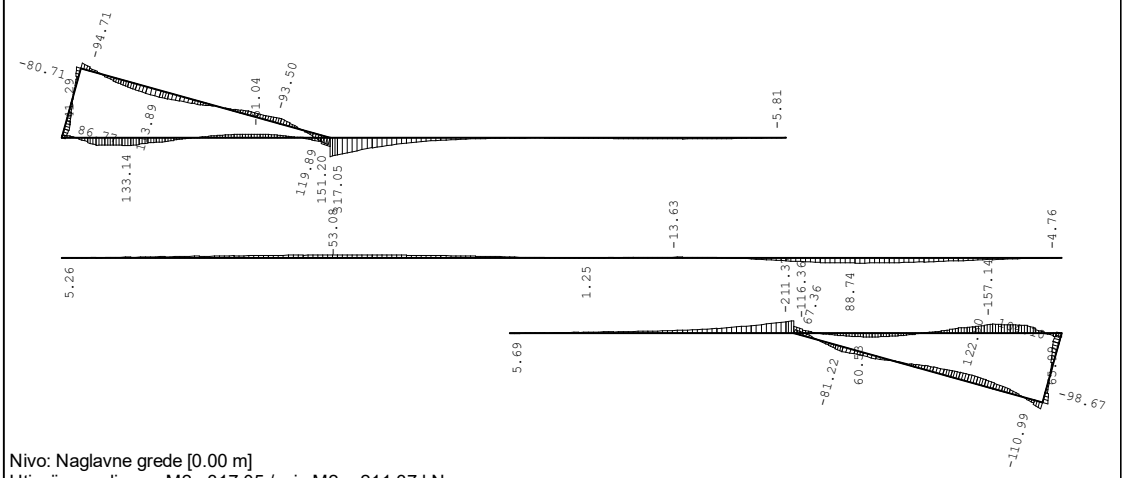

Opt. 12: komb temp 2
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 338.92 / min M2= -362.67 kNm


Opt. 13: komb temp 3
-115.52
-136.10
-43.80
-353.82
-235.52
-3.54
-8.46
-39.76
167.36
96.71
0.35
-9.57
8.05
-77.73
68.35
139.18
4.25
159.10
254.23
-40.83
-103.24
-122.98
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 382.79 / min M2= -353.82 kNm


Opt. 14: komb temp 4
-112.23
-132.02
-68.88
-137.12
-1.98
-5.73
248.49
-51.07
159.68
98.48
3.84
-1.90
-2.06
-5.34
5.32
3.51
-87.58
112.05
82.33
-250.75
3.33
5.64
105.61
-63.86
-115.02
-133.38
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 269.74 / min M2= -250.75 kNm

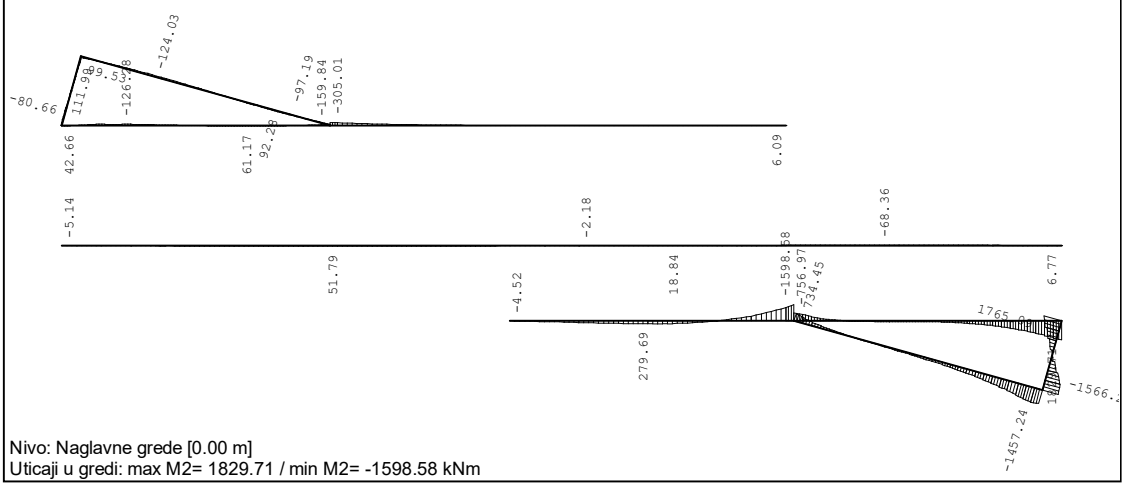

Opt. 15: komb temp 5
-90.10
-106.37
-30.46
-508.70
-18.23
303.18
145.23
91.52
-18.41
-19.96
-3.02
-21.50
12.46
6.94
-61.02
61.43
132.97
0.79
-251.35
1.73
312.51
370.03
-31.28
-165.03
-81.27
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 418.68 / min M2= -508.70 kNm

Opt. 16: komb temp 6



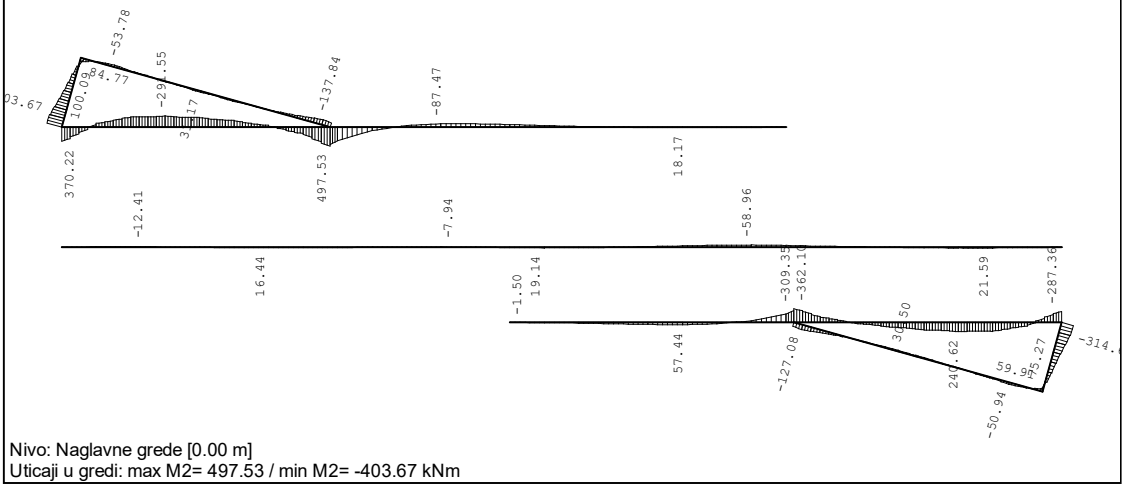
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 317.05 / min M2= -211.37 kNm

Opt. 17: komb temp 7



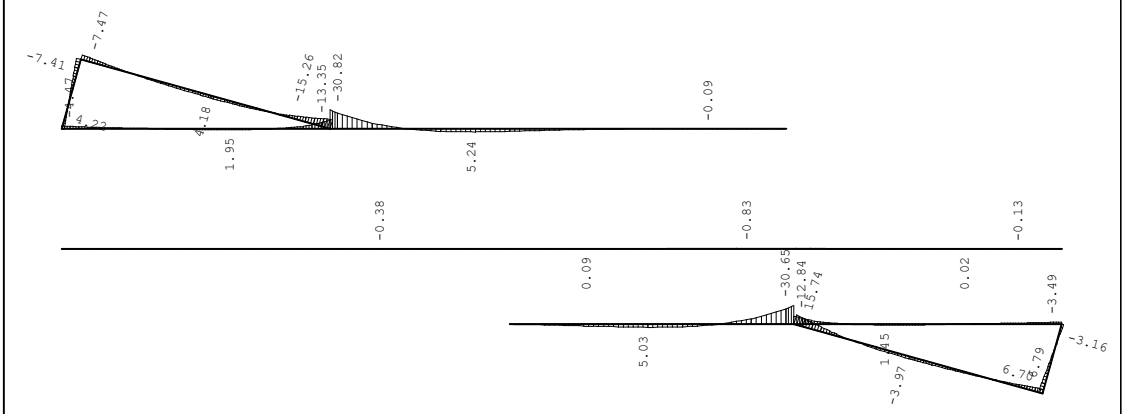
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 1829.71 / min M2= -1598.58 kNm

Opt. 18: komb temp 8



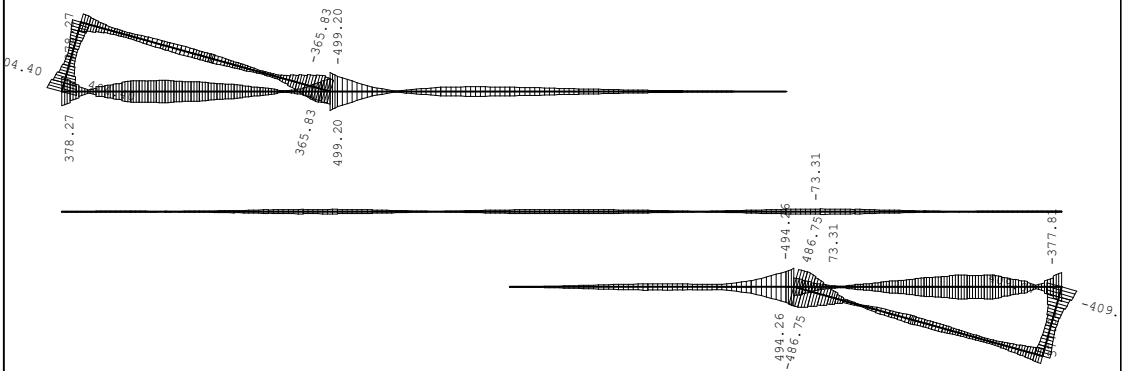
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 497.53 / min M2= -403.67 kNm

Opt. 19: BU



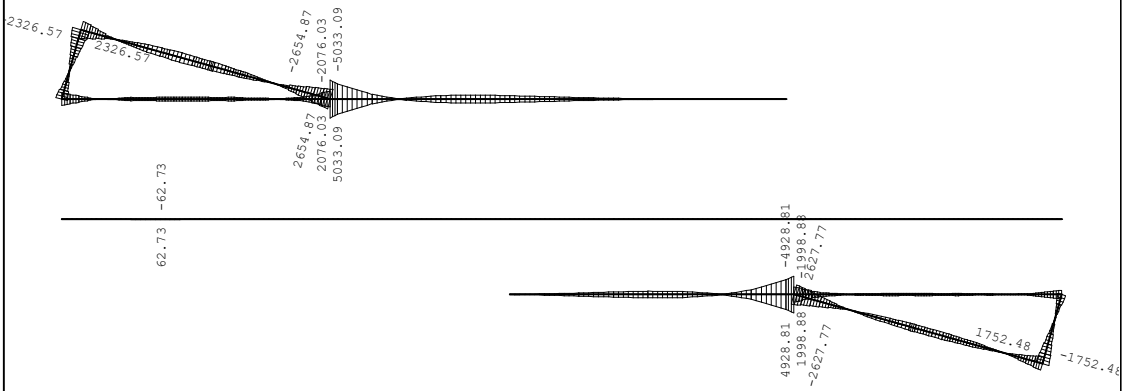
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 15.74 / min M2= -30.82 kNm

Opt. 20: Sx



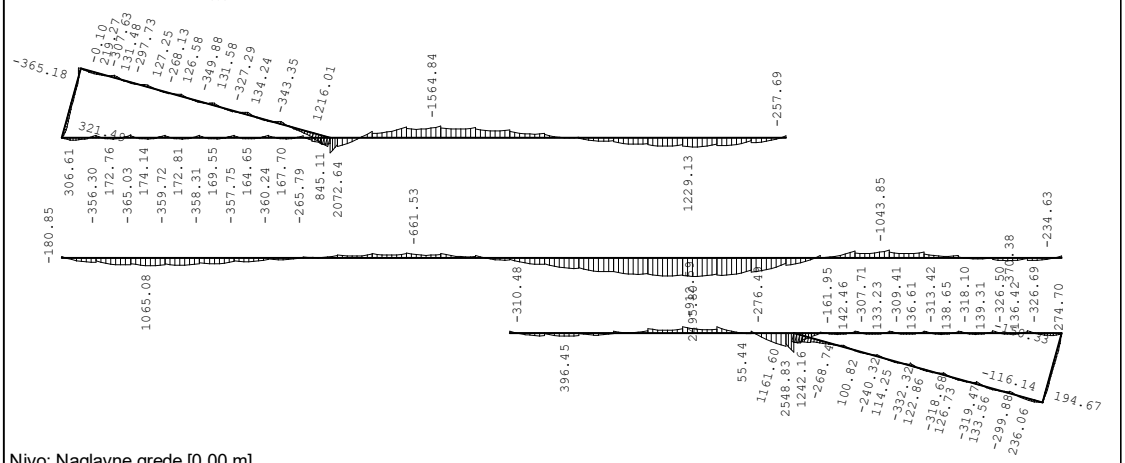
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 499.20 / min M2= -499.20 kNm

Opt. 21: Sy



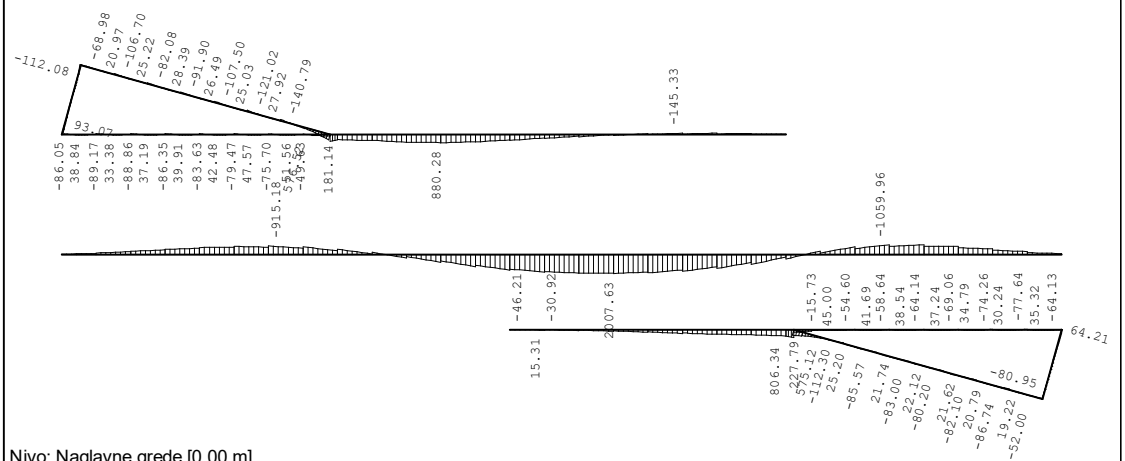
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M2= 5033.09 / min M2= -5033.09 kNm

Opt. 1: sopstvena tezina (g)



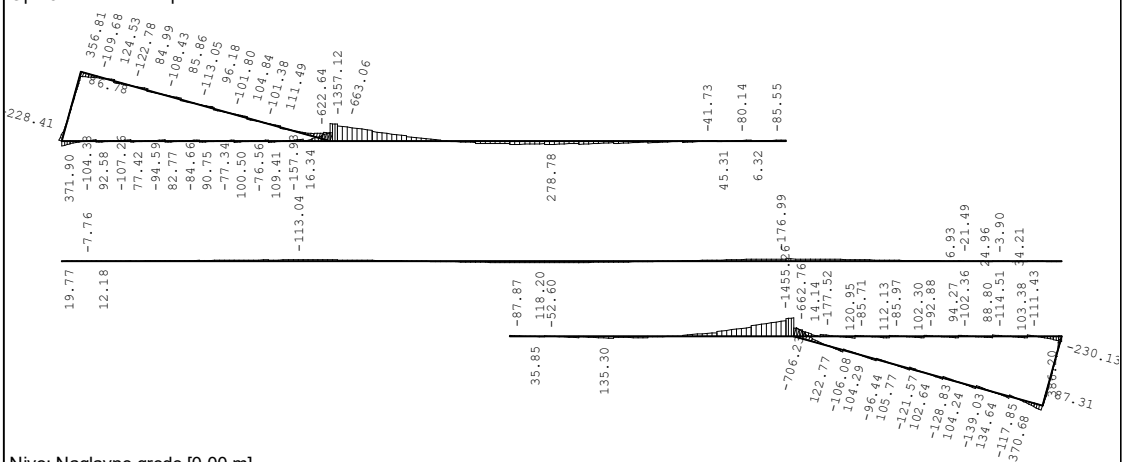
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 2548.83 / min M3= -1564.84 kNm

Opt. 2: mrtav teret (Δg)



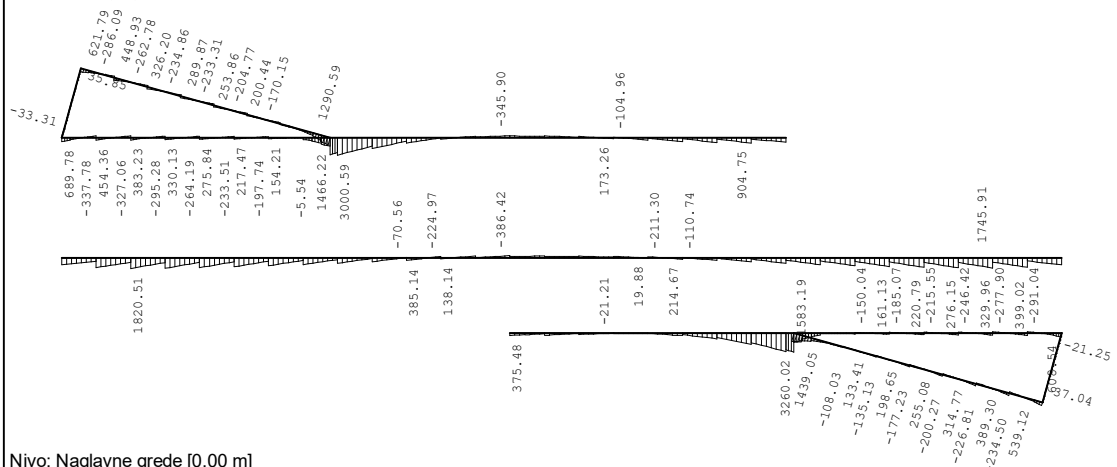
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 2007.63 / min M3= -1059.96 kNm

Opt. 3: horizontalan pritisak tla



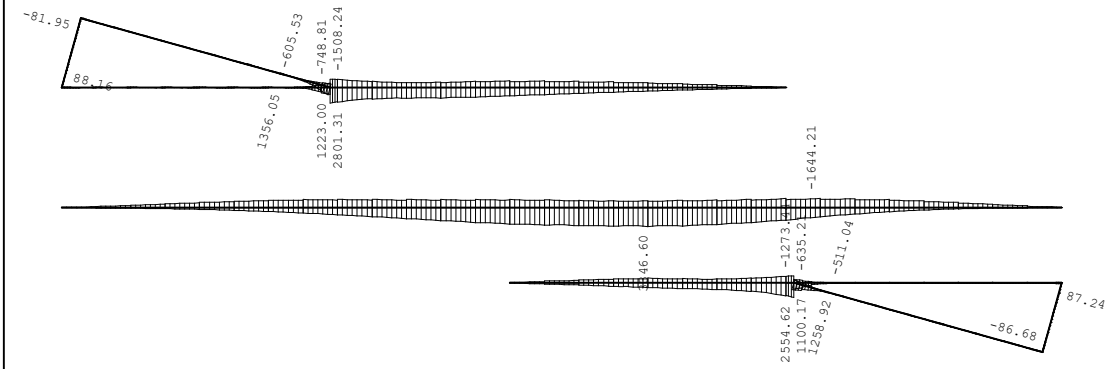
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 386.20 / min M3= -1455.26 kNm

Opt. 4: skupljanje



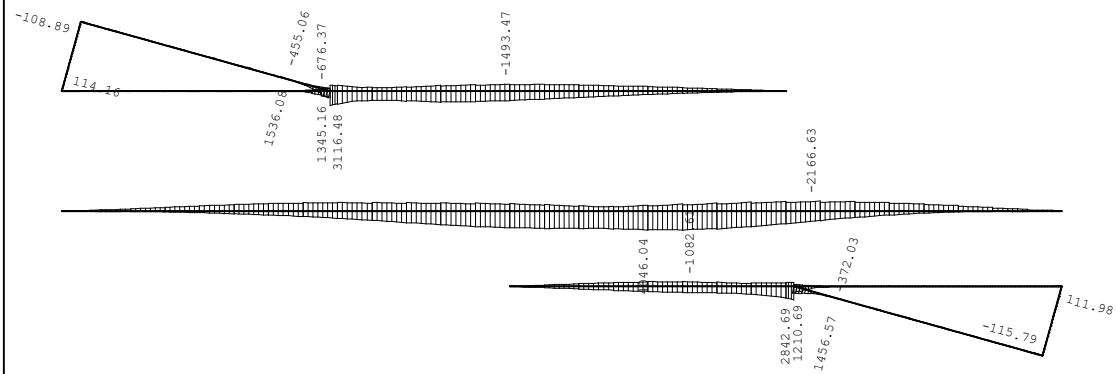
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 3260.02 / min M3= -386.42 kNm

Opt. 5: LM71



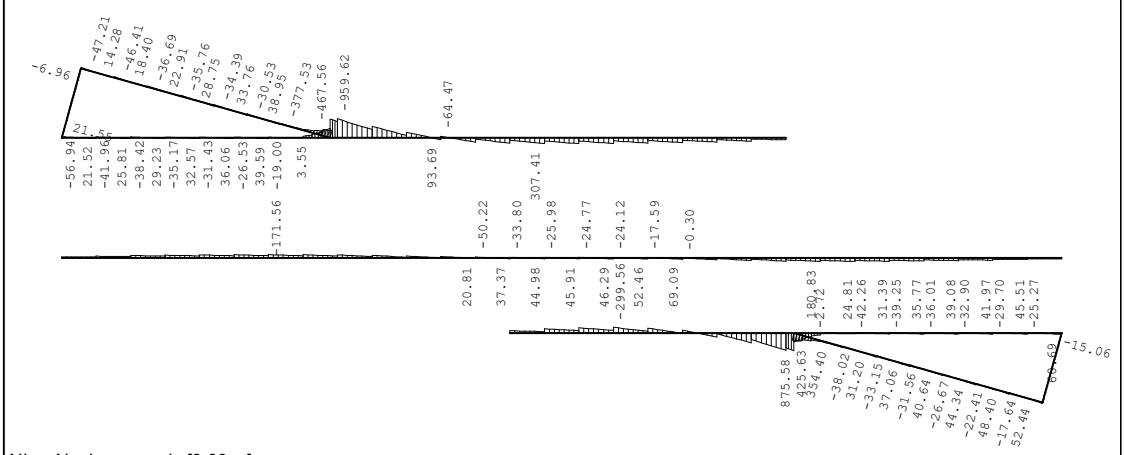
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 3346.60 / min M3= -1644.21 kNm

Opt. 6: SW/2



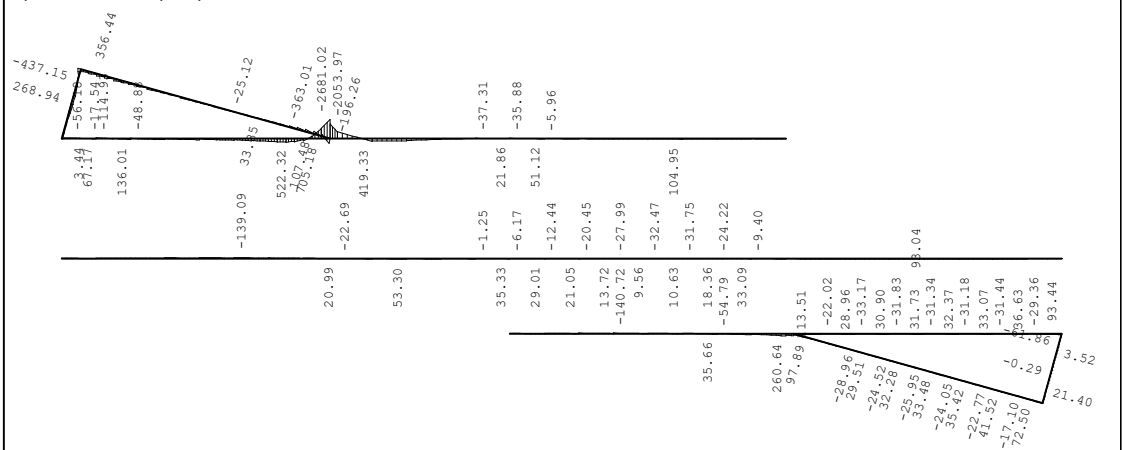
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 4046.04 / min M3= -2166.63 kNm

Opt. 7: KP



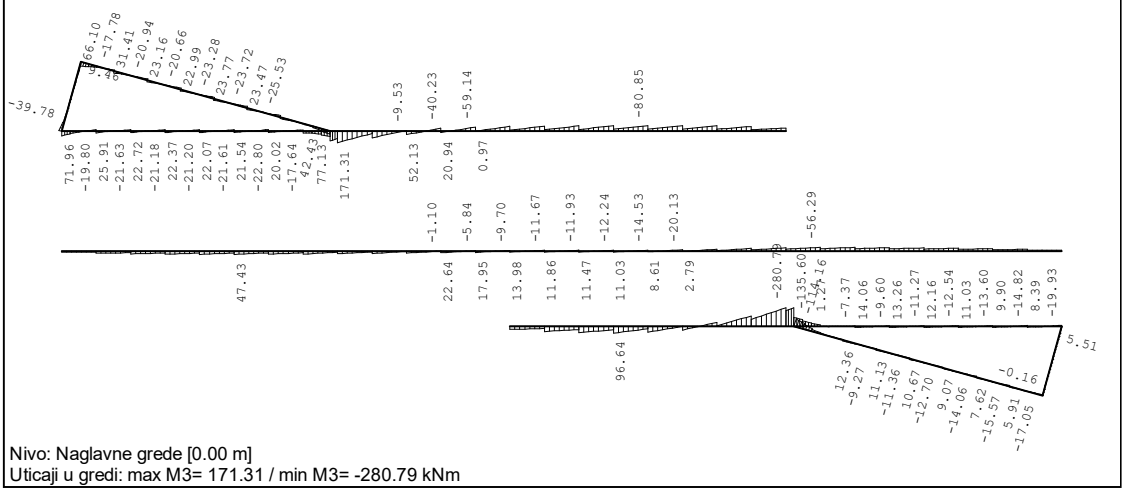
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 875.58 / min M3= -959.62 kNm

Opt. 8: voz na nasipu ispred



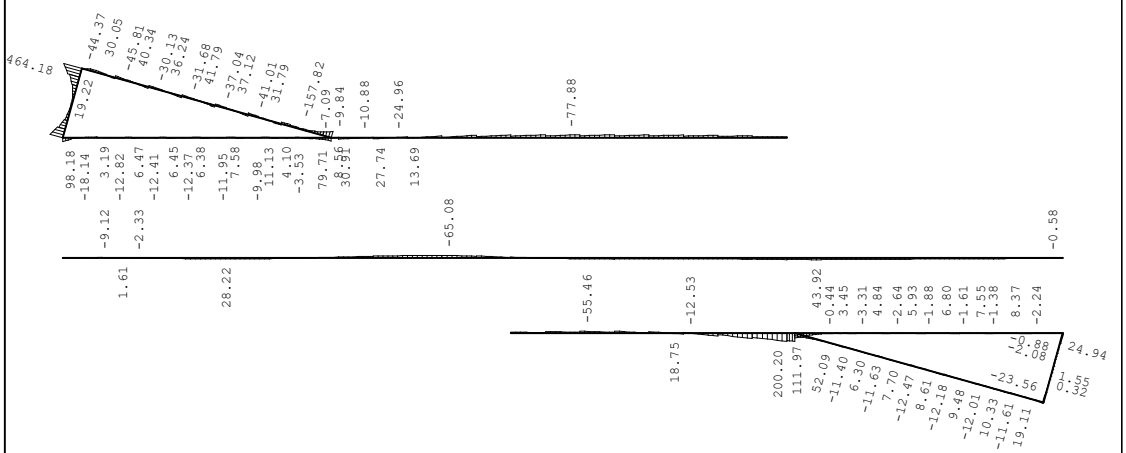
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 705.18 / min M3= -2681.02 kNm

Opt. 9: voz na nasipu iza



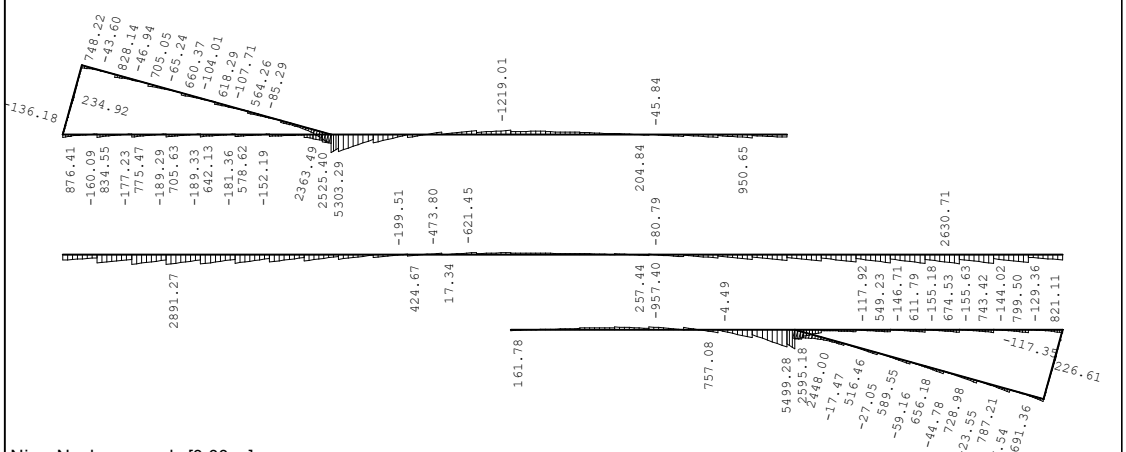
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 171.31 / min M3= -280.79 kNm

Opt. 10: voz ispod



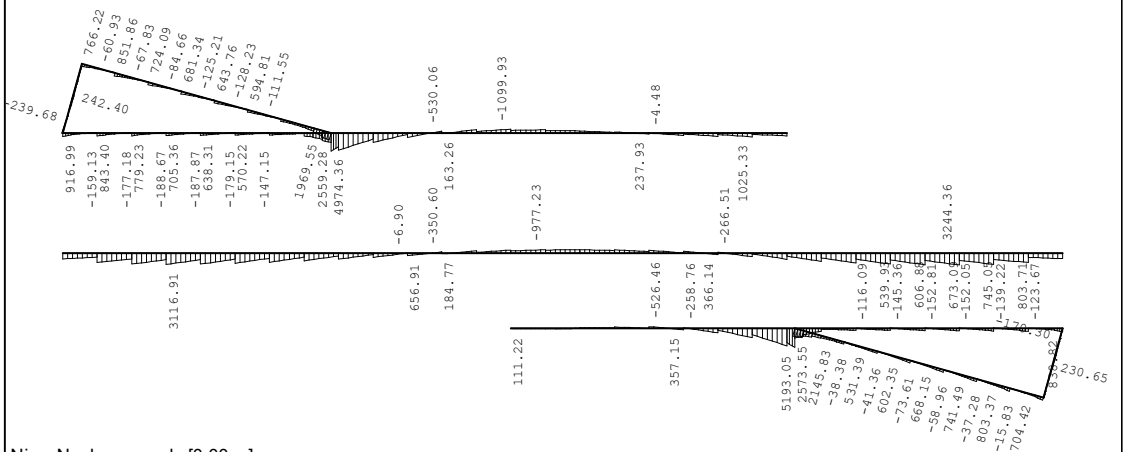
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 200.20 / min M3= -464.18 kNm

Opt. 11: komb temp 1

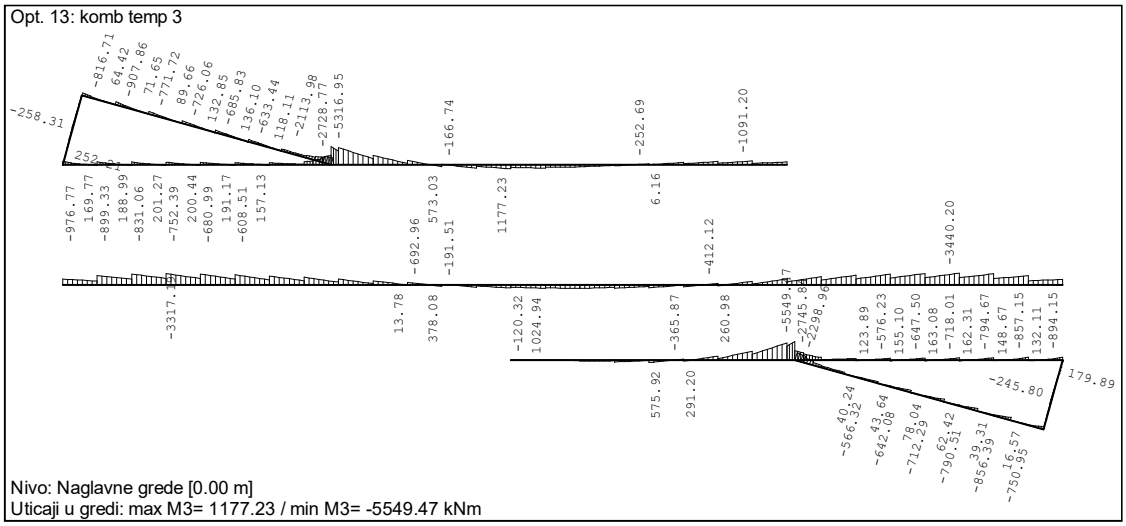


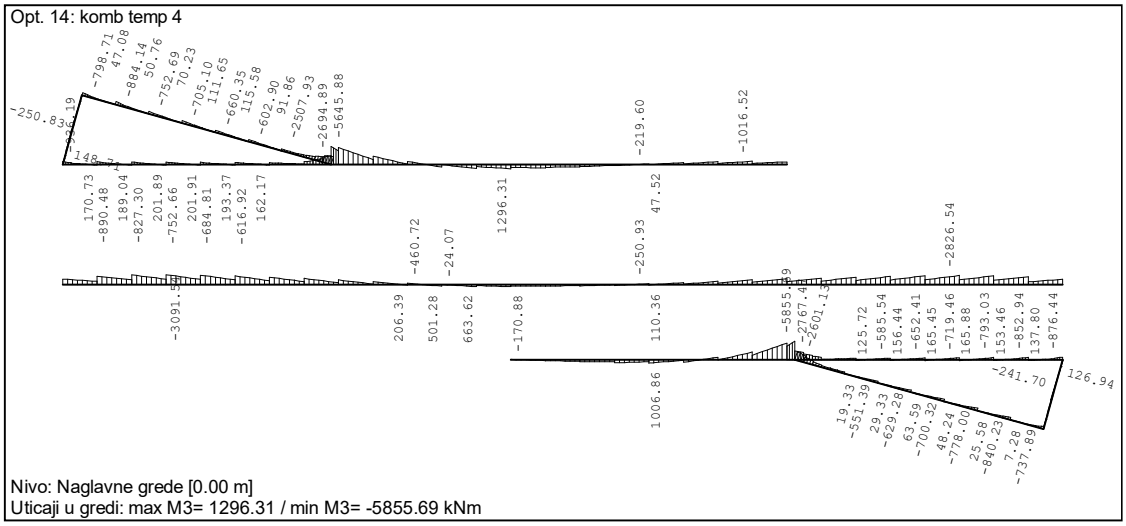
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 5499.28 / min M3= -1219.01 kNm

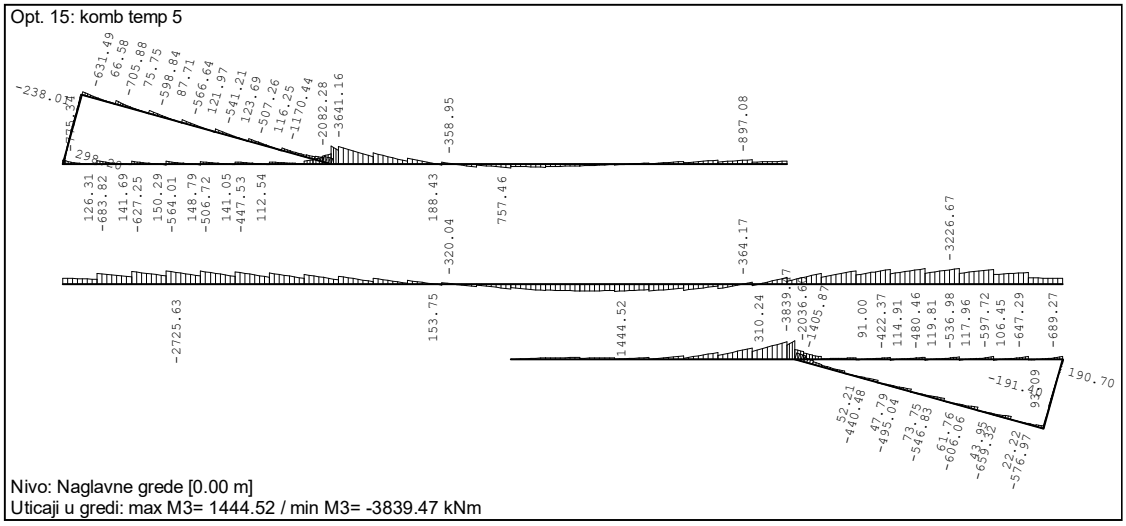
Opt. 12: komb temp 2



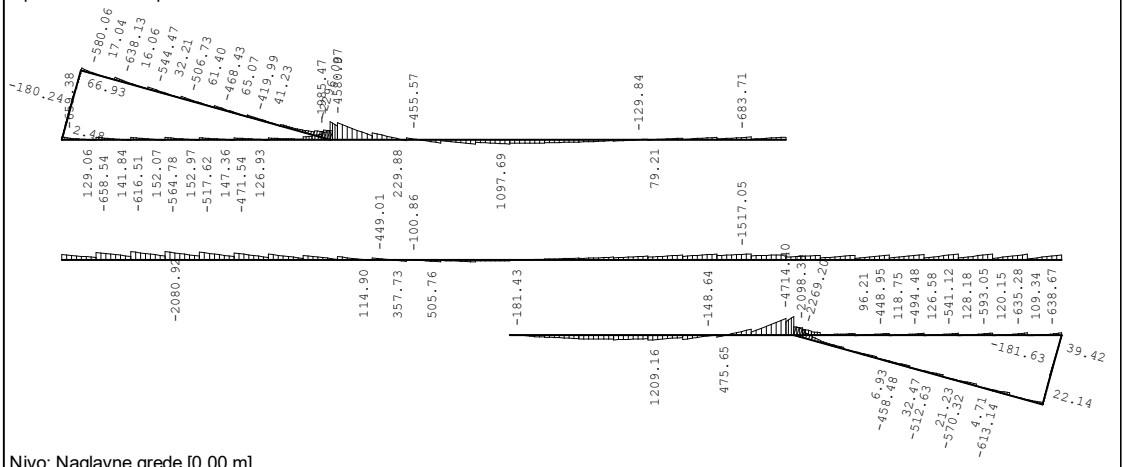
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 5193.05 / min M3= -1099.93 kNm


Opt. 13: komb temp 3
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 1177.23 / min M3= -5549.47 kNm


Opt. 14: komb temp 4
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 1296.31 / min M3= -5855.69 kNm

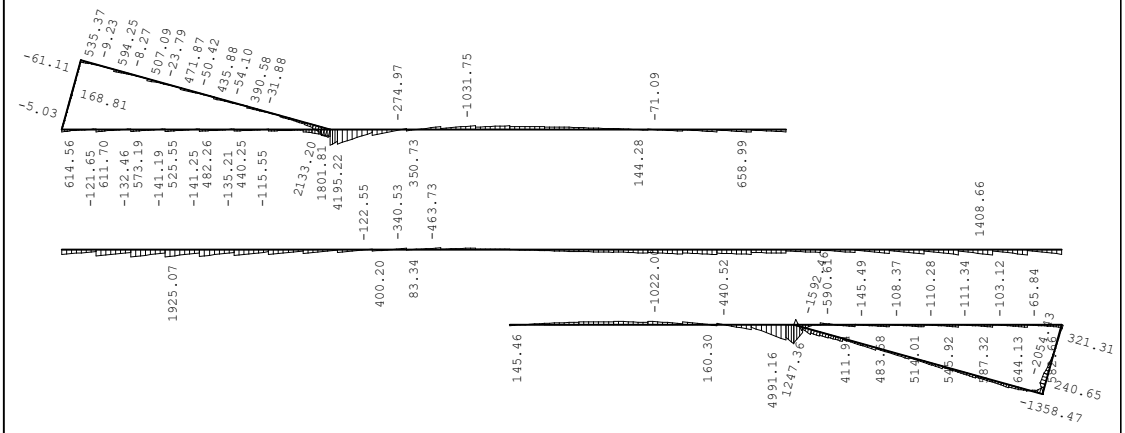

Opt. 15: komb temp 5
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 1444.52 / min M3= -3839.47 kNm

Opt. 16: komb temp 6



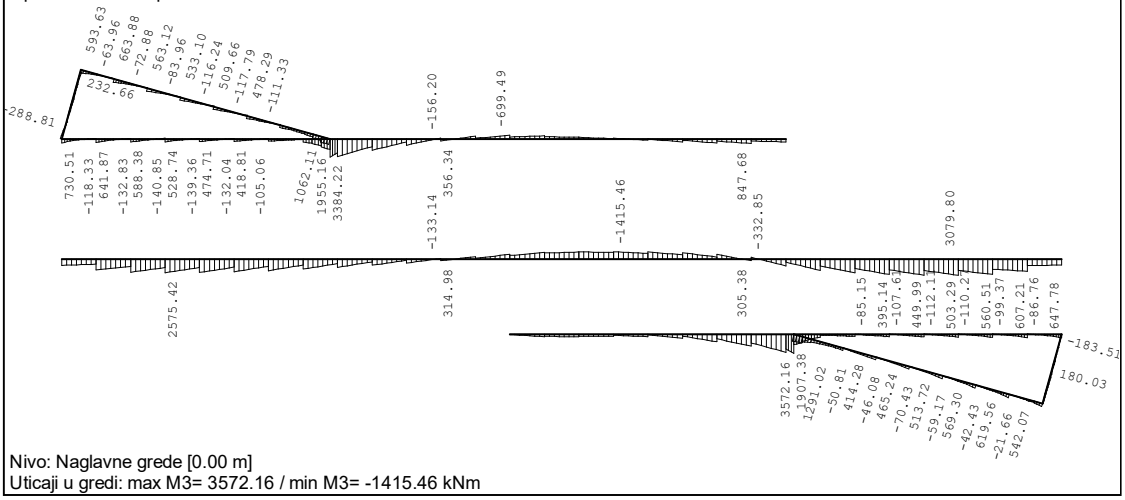
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 1209.16 / min M3= -4714.40 kNm

Opt. 17: komb temp 7



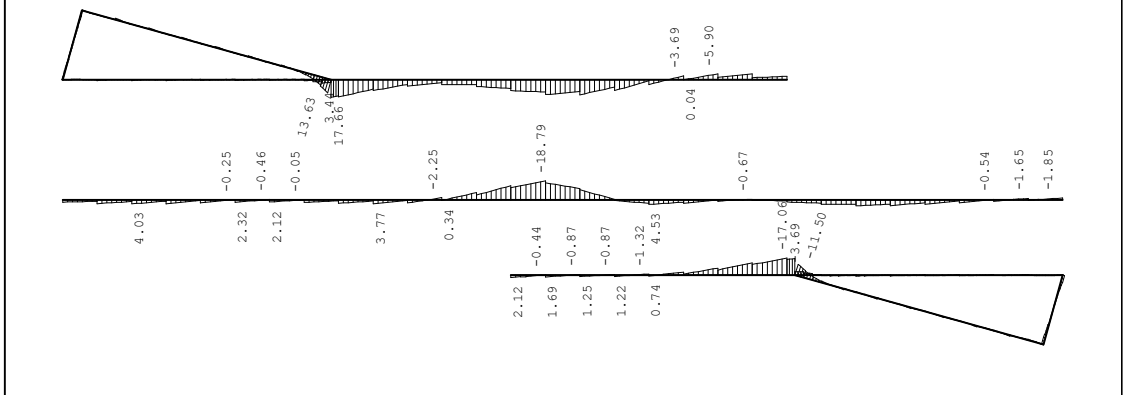
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 4991.16 / min M3= -2054.43 kNm

Opt. 18: komb temp 8



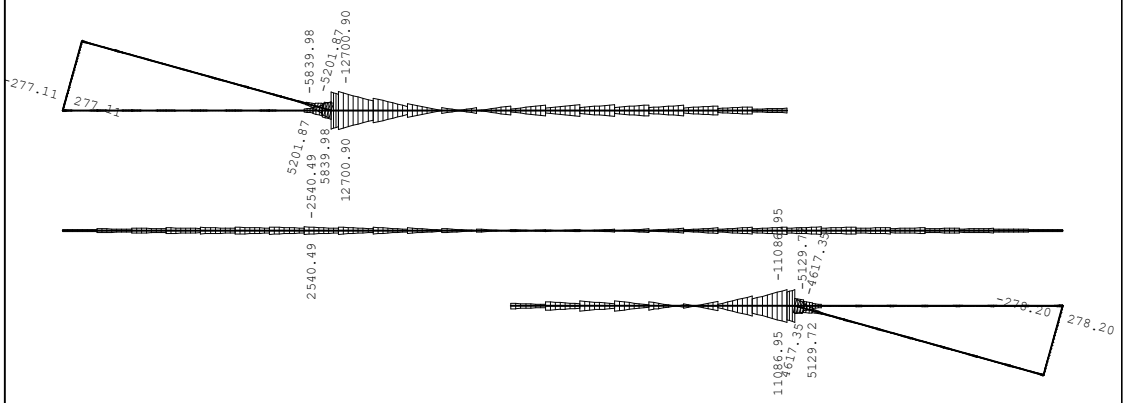
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 3572.16 / min M3= -1415.46 kNm

Opt. 19: BU



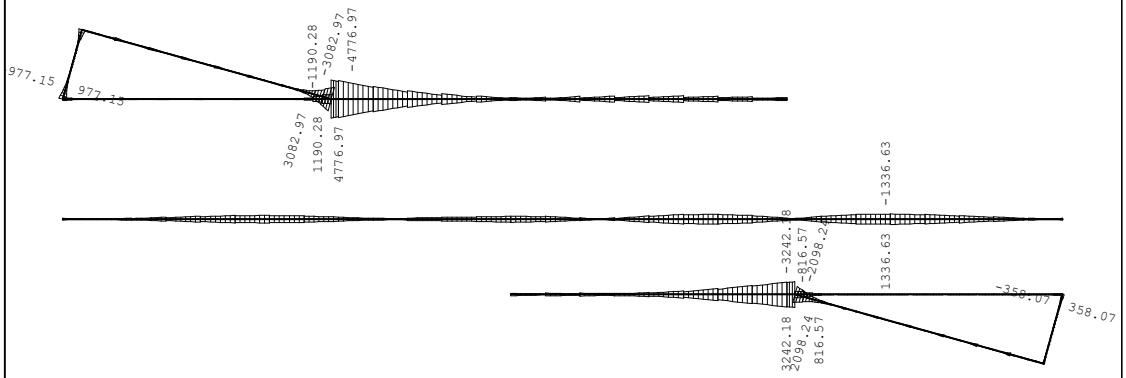
Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 17.66 / min M3= -18.79 kNm

Opt. 20: Sx



Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 12700.90 / min M3= -12700.90 kNm

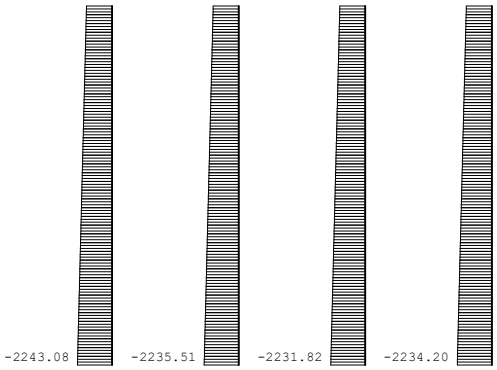
Opt. 21: Sy



Nivo: Naglavne grede [0.00 m]
Uticaji u gredi: max M3= 4776.97 / min M3= -4776.97 kNm

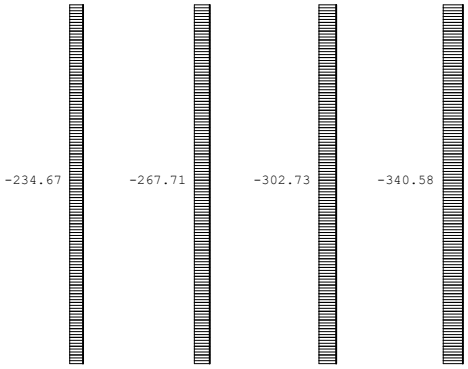
5.5.6 Шипови

Opt. 1: sopstvena tezina (g)



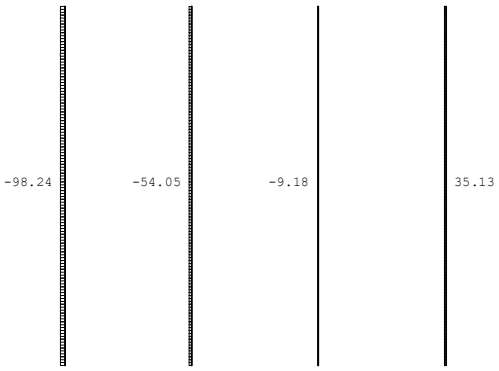
Ram: Ram 1
Uticaji u gredi: max N1= 1045.36 / min N1= -2243.08 kN

Opt. 2: mrtav teret (Δg)



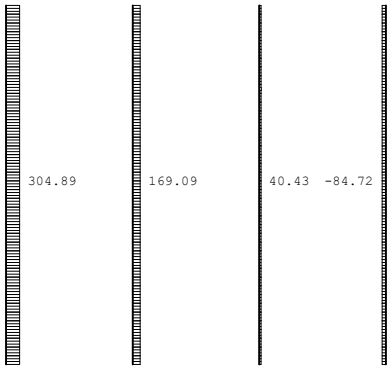
Ram: Ram 1
Uticaji u gredi: max N1= 604.12 / min N1= -340.58 kN

Opt. 3: horizontalan pritisak tla



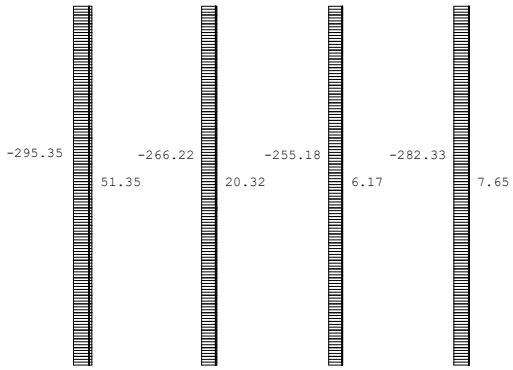
Ram: Ram 1
Uticaji u gredi: max N1= 35.13 / min N1= -719.69 kN

Opt. 4: skupljanje



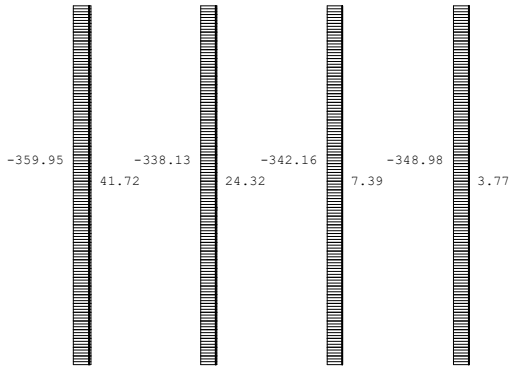
Ram: Ram 1
Uticaji u gredi: max N1= 785.73 / min N1= -84.72 kN

Opt. 5: LM71



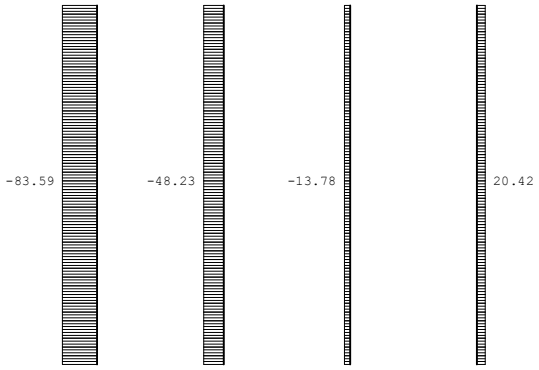
Ram: Ram 1
Uticaji u gredi: max N1= 655.22 / min N1= -295.35 kN

Opt. 6: SW/2



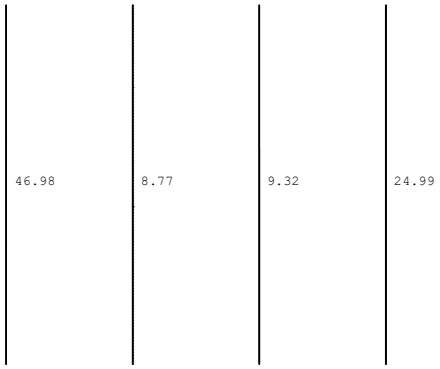
Ram: Ram 1
Uticaji u gredi: max N1= 786.72 / min N1= -359.95 kN

Opt. 7: KP



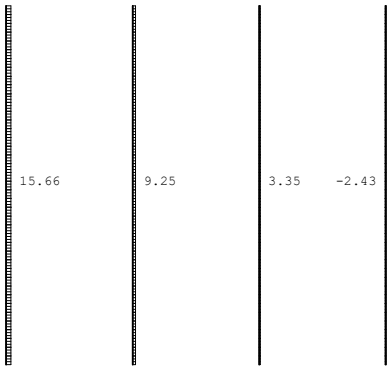
Ram: Ram 1
Uticaji u gredi: max N1= 73.68 / min N1= -83.59 kN

Opt. 8: voz na nasipu ispred



Ram: Ram 1
Uticaji u gredi: max N1= 46.98 / min N1= -5303.28 kN

Opt. 9: voz na nasipu iza

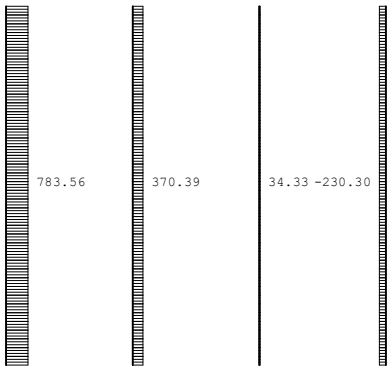


Ram: Ram 1
Uticaji u gredi: max N1= 15.66 / min N1= -113.34 kN

Opt. 10: voz ispod

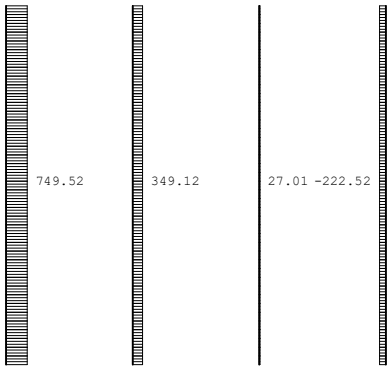
Ram: Ram 1
Uticaji u gredi: max N1= 54.07 / min N1= -772.38 kN

Opt. 11: komb temp 1



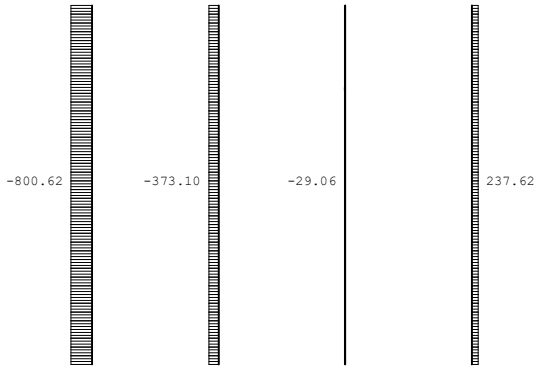
Ram: Ram 1
Uticaji u gredi: max N1= 1244.62 / min N1= -230.30 kN

Opt. 12: komb temp 2



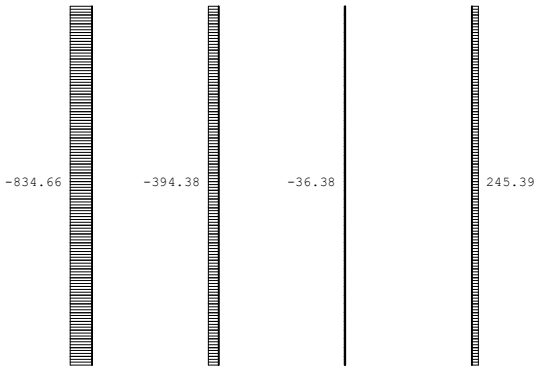
Ram: Ram 1
Uticaji u gredi: max N1= 1230.09 / min N1= -222.52 kN

Opt. 13: komb temp 3



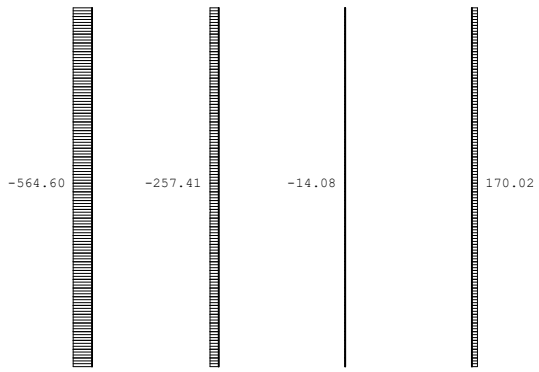
Ram: Ram 1
Uticaji u gredi: max N1= 237.62 / min N1= -1310.37 kN

Opt. 14: komb temp 4



Ram: Ram 1
Uticaji u gredi: max N1= 245.39 / min N1= -1318.77 kN

Opt. 15: komb temp 5

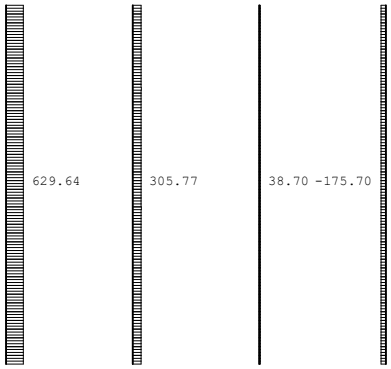


Ram: Ram 1
Uticaji u gredi: max N1= 267.81 / min N1= -1037.35 kN

Opt. 16: komb temp 6

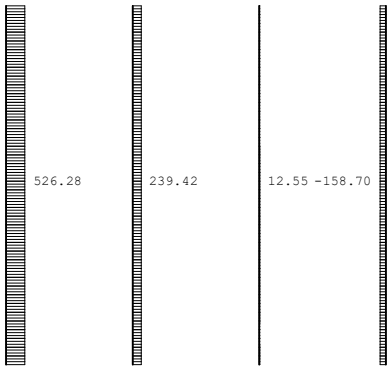
Ram: Ram 1
Uticaji u gredi: max N1= 192.24 / min N1= -1334.87 kN

Opt. 17: komb temp 7



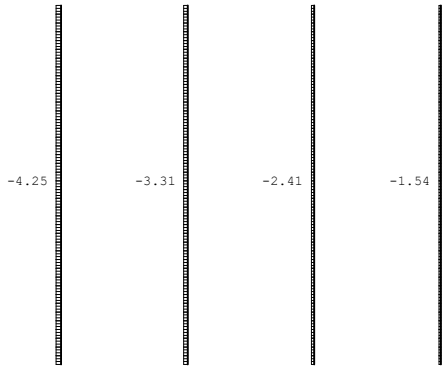
Ram: Ram 1
Uticaji u gredi: max N1= 1267.94 / min N1= -175.70 kN

Opt. 18: komb temp 8



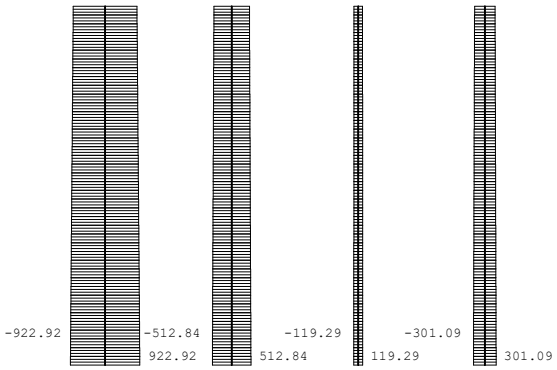
Ram: Ram 1
Uticaji u gredi: max N1= 977.14 / min N1= -297.16 kN

Opt. 19: BU



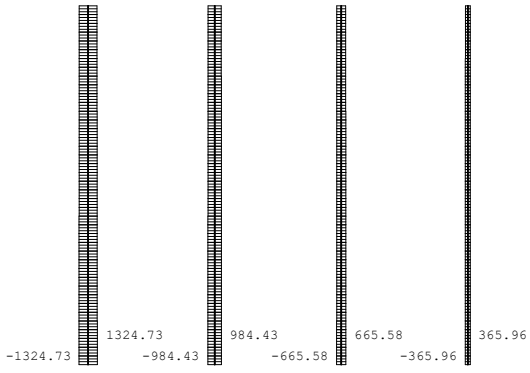
Ram: Ram 1
Uticaji u gredi: max N1= 28.66 / min N1= -4.25 kN

Opt. 20: Sx



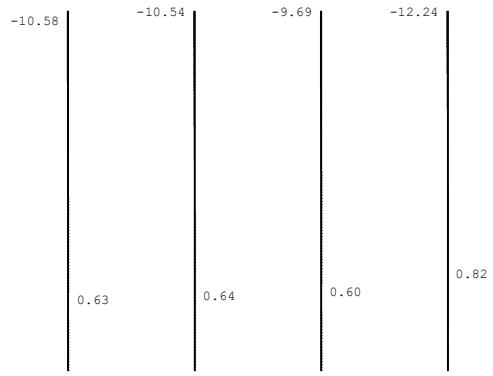
Ram: Ram 1
Uticaji u gredi: max N1= 922.92 / min N1= -922.92 kN

Opt. 21: Sy



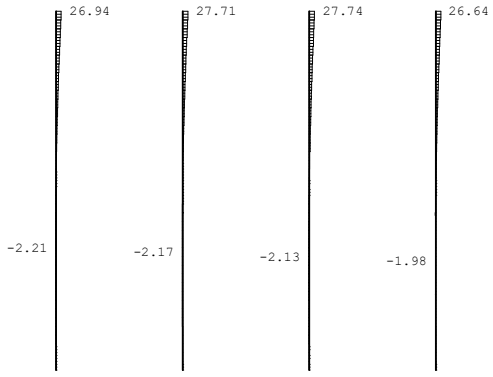
Ram: Ram 1
Uticaji u gredi: max N1= 5010.90 / min N1= -5010.90 kN

Opt. 1: sopstvena tezina (g)



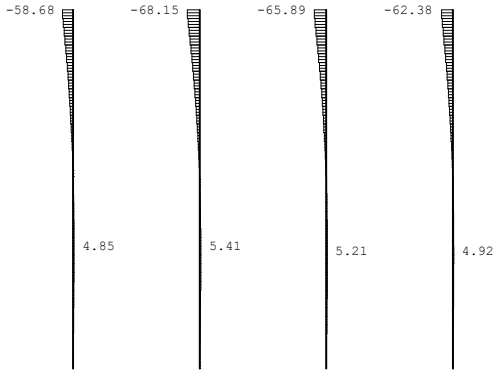
Ram: Ram 1
Uticaji u gredi: max T2= 414.26 / min T2= -439.54 kN

Opt. 2: mrtav teret (Δg)



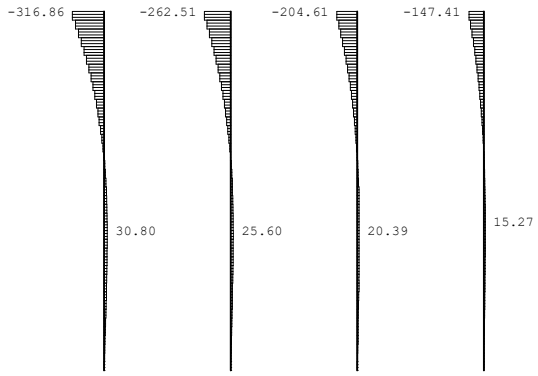
Ram: Ram 1
Uticaji u gredi: max T2= 40.39 / min T2= -185.40 kN

Opt. 3: horizontalan pritisak tla



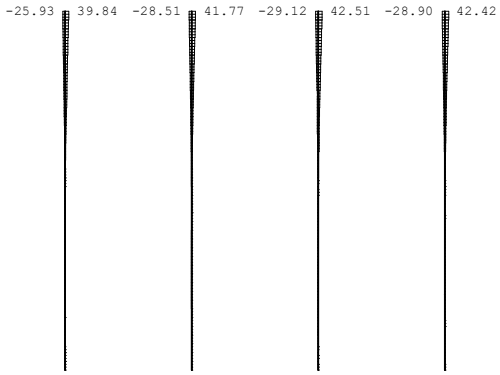
Ram: Ram 1
Uticaji u gredi: max T2= 190.61 / min T2= -68.15 kN

Opt. 4: skupljanje



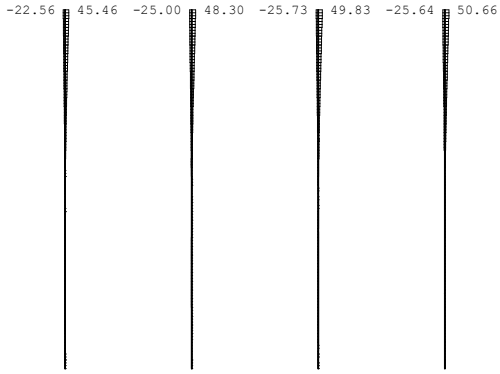
Ram: Ram 1
Uticaji u gredi: max T2= 302.12 / min T2= -346.64 kN

Opt. 5: LM71



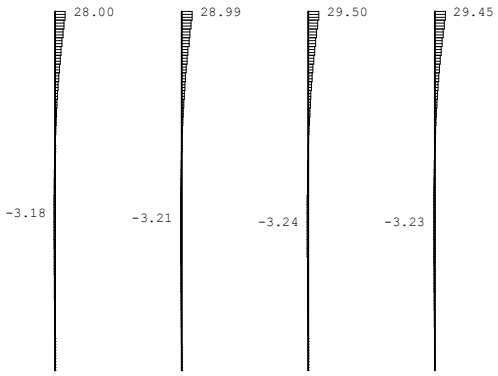
Ram: Ram 1
Uticaji u gredi: max T2= 162.76 / min T2= -382.13 kN

Opt. 6: SW/2



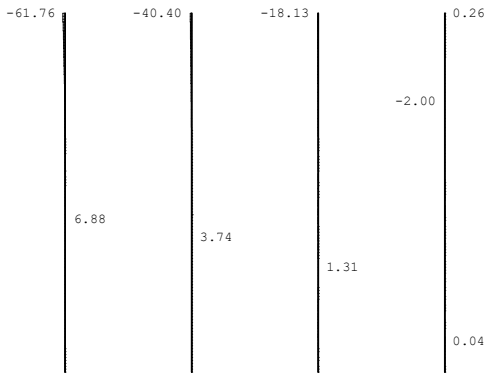
Ram: Ram 1
Uticaji u gredi: max T2= 115.71 / min T2= -432.04 kN

Opt. 7: KP



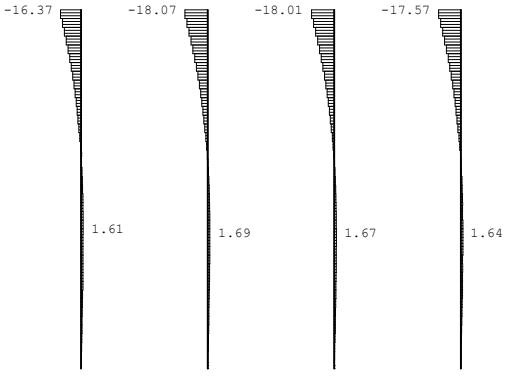
Ram: Ram 1
Uticaji u gredi: max T2= 96.67 / min T2= -32.67 kN

Opt. 8: voz na nasipu ispred



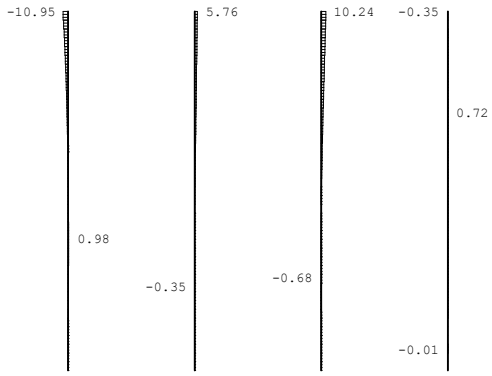
Ram: Ram 1
Uticaji u gredi: max T2= 250.40 / min T2= -974.40 kN

Opt. 9: voz na nasipu iza



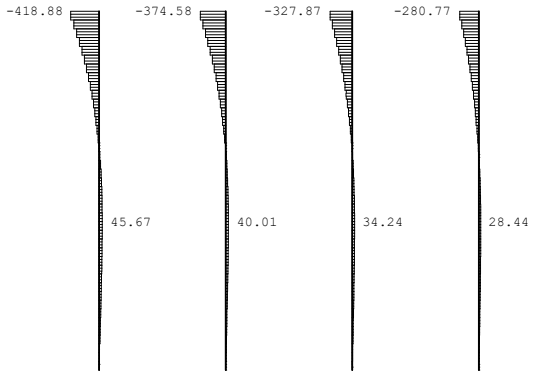
Ram: Ram 1
Uticaji u gredi: max T2= 27.46 / min T2= -18.13 kN

Opt. 10: voz ispod



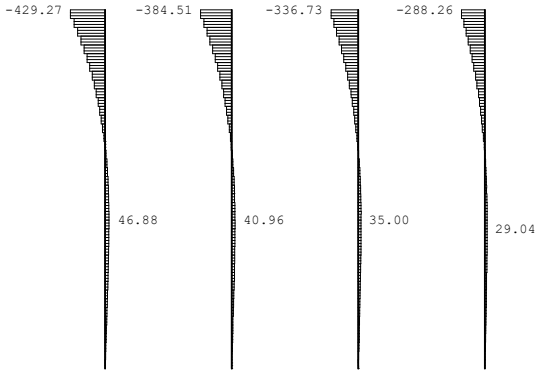
Ram: Ram 1
Uticaji u gredi: max T2= 78.22 / min T2= -38.67 kN

Opt. 11: komb temp 1



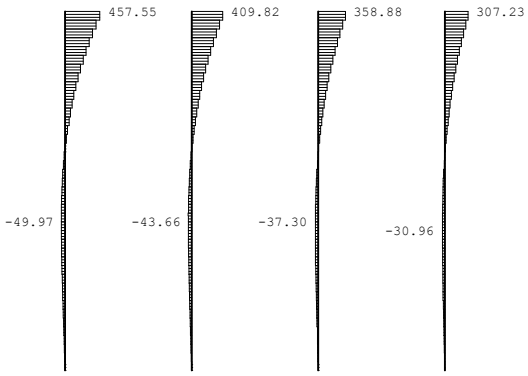
Ram: Ram 1
Uticaji u gredi: max T2= 368.30 / min T2= -512.32 kN

Opt. 12: komb temp 2



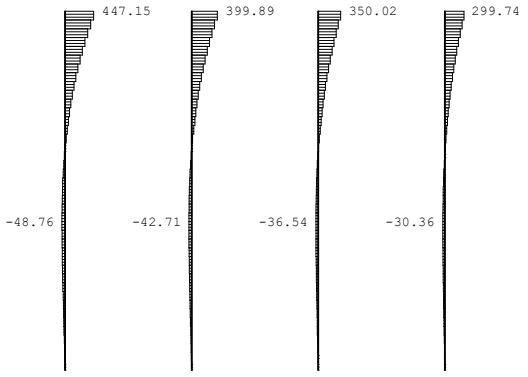
Ram: Ram 1
Uticaji u gredi: max T2= 377.09 / min T2= -429.27 kN

Opt. 13: komb temp 3



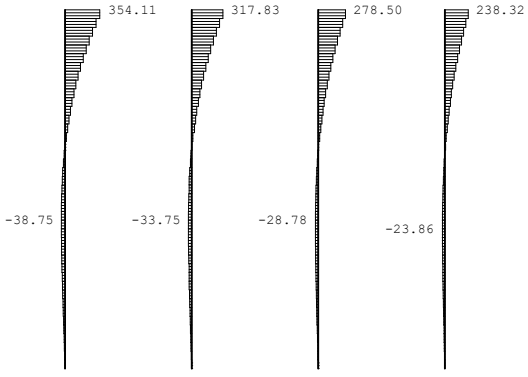
Ram: Ram 1
Uticaji u gredi: max T2= 457.55 / min T2= -401.94 kN

Opt. 14: komb temp 4



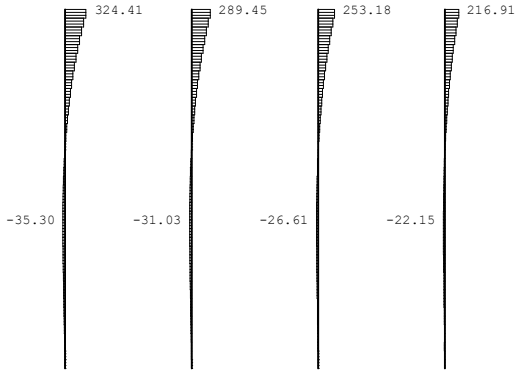
Ram: Ram 1
Uticaji u gredi: max T2= 542.24 / min T2= -393.14 kN

Opt. 15: komb temp 5



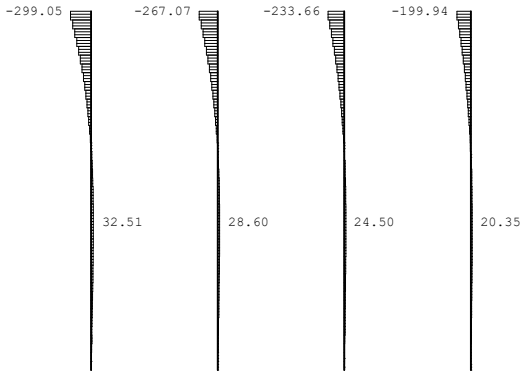
Ram: Ram 1
Uticaji u gredi: max T2= 354.11 / min T2= -310.72 kN

Opt. 16: komb temp 6



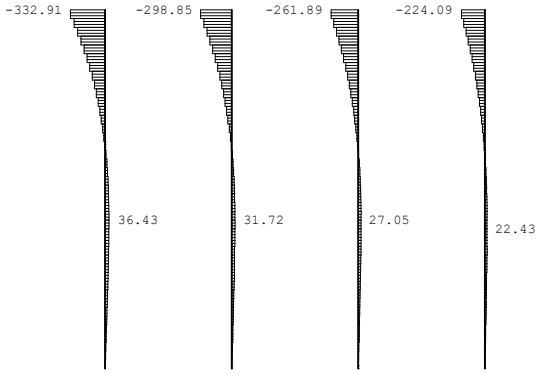
Ram: Ram 1
Uticaji u gredi: max T2= 540.63 / min T2= -303.71 kN

Opt. 17: komb temp 7



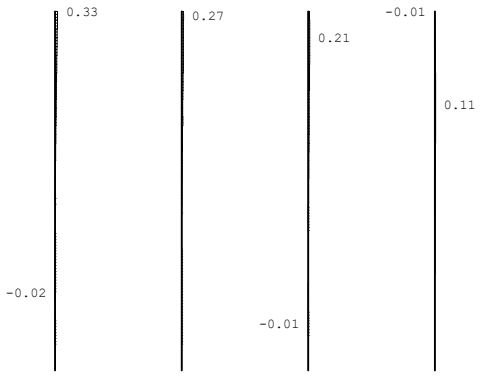
Ram: Ram 1
Uticaji u gredi: max T2= 282.11 / min T2= -502.53 kN

Opt. 18: komb temp 8



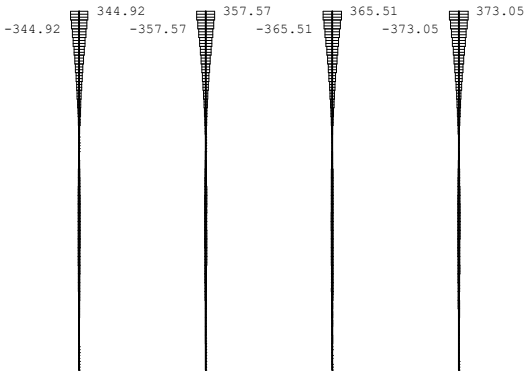
Ram: Ram 1
Uticaji u gredi: max T2= 292.09 / min T2= -332.91 kN

Opt. 19: BU



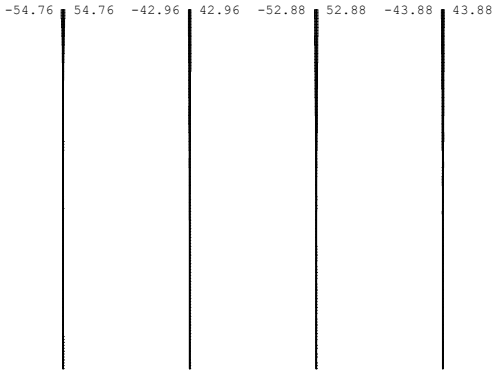
Ram: Ram 1
Uticaji u gredi: max T2= 0.58 / min T2= -5.20 kN

Opt. 20: Sx



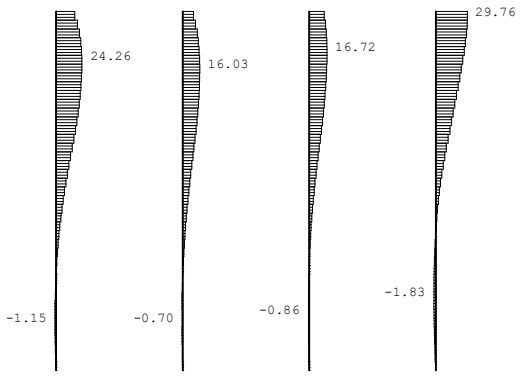
Ram: Ram 1
Uticaji u gredi: max T2= 1381.34 / min T2= -1381.34 kN

Opt. 21: Sy



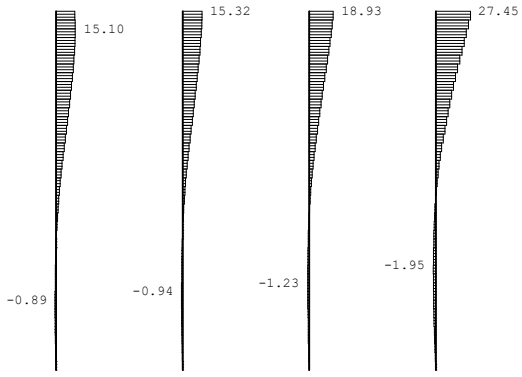
Ram: Ram 1
Uticaji u gredi: max T2= 1113.75 / min T2= -1113.75 kN

Opt. 1: sopstvena tezina (g)



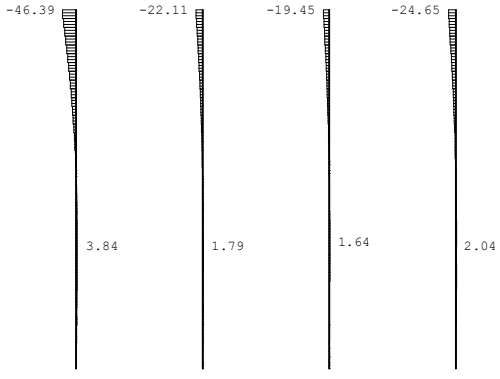
Ram: Ram 1
Uticaji u gredi: max T3= 32.60 / min T3= -31.80 kN

Opt. 2: mrtav teret (Δg)



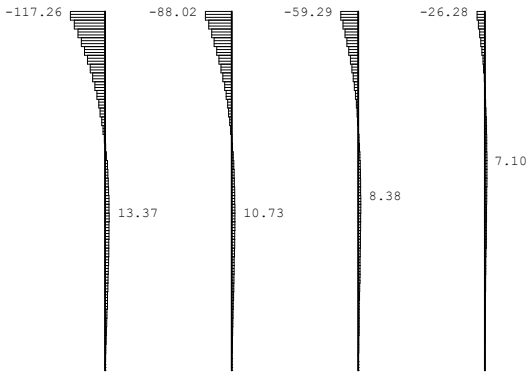
Ram: Ram 1
Uticaji u gredi: max T3= 27.45 / min T3= -16.15 kN

Opt. 3: horizontalan pritisak tla



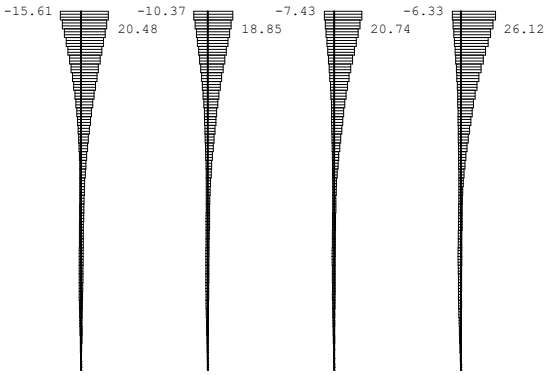
Ram: Ram 1
Uticaji u gredi: max T3= 25.12 / min T3= -118.03 kN

Opt. 4: skupljanje



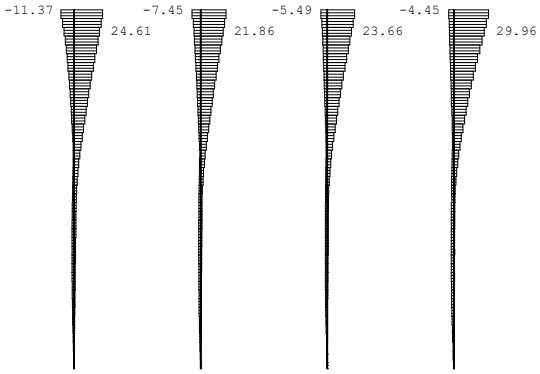
Ram: Ram 1
Uticaji u gredi: max T3= 13.37 / min T3= -117.26 kN

Opt. 5: LM71



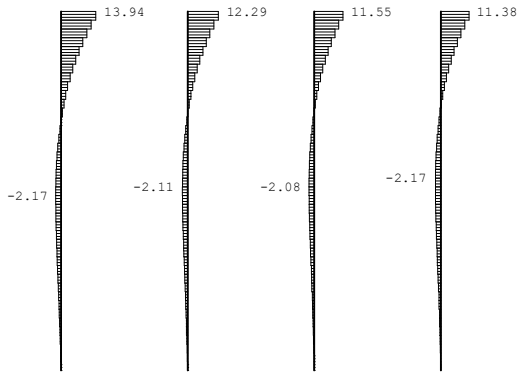
Ram: Ram 1
Uticaji u gredi: max T3= 26.12 / min T3= -15.61 kN

Opt. 6: SW/2



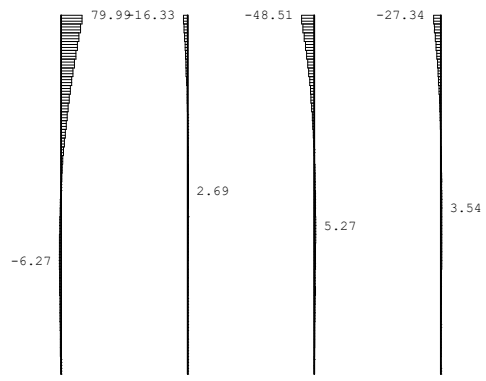
Ram: Ram 1
Uticaji u gredi: max T3= 29.96 / min T3= -14.53 kN

Opt. 7: KP



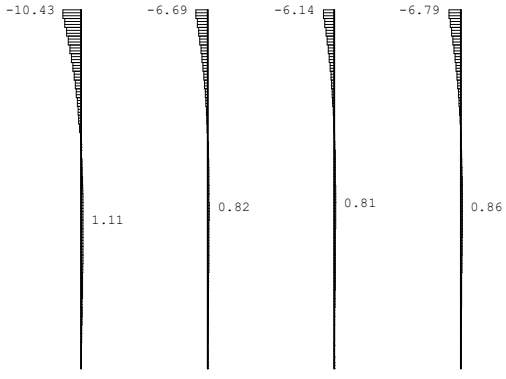
Ram: Ram 1
Uticaji u gredi: max T3= 13.94 / min T3= -12.94 kN

Opt. 8: voz na nasipu ispred



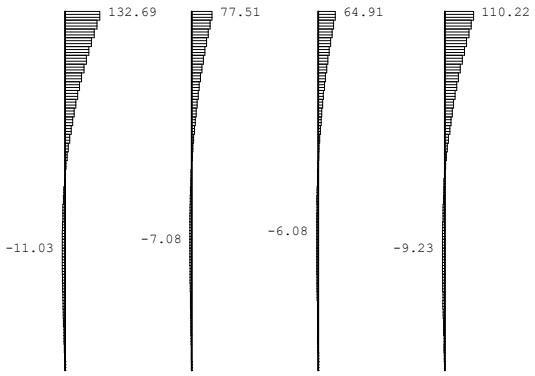
Ram: Ram 1
Uticaji u gredi: max T3= 129.98 / min T3= -132.70 kN

Opt. 9: voz na nasipu iza



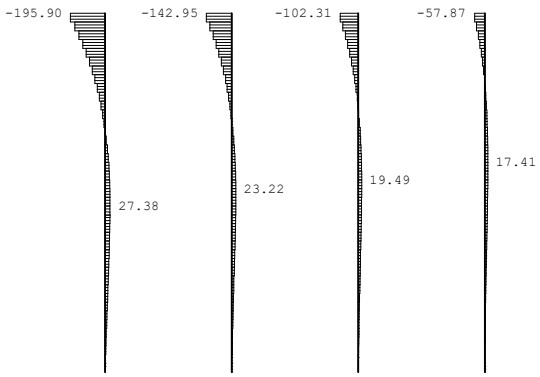
Ram: Ram 1
Uticaji u gredi: max T3= 6.22 / min T3= -19.77 kN

Opt. 10: voz ispod



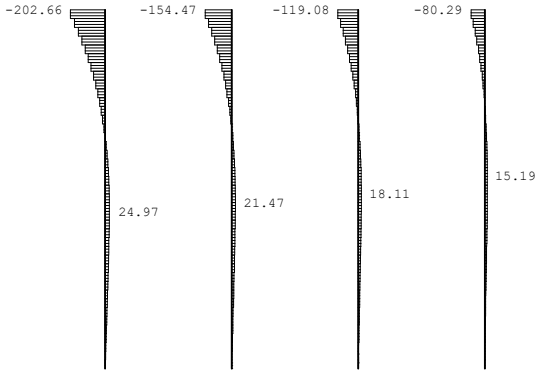
Ram: Ram 1
Uticaji u gredi: max T3= 132.69 / min T3= -110.97 kN

Opt. 11: komb temp 1



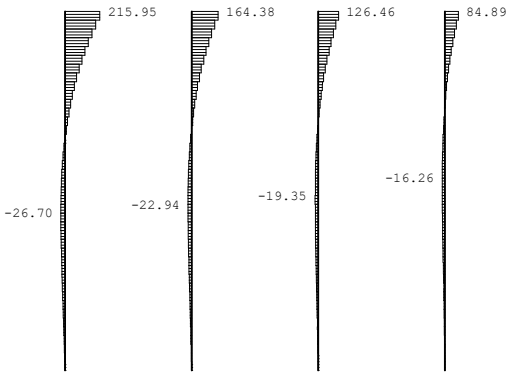
Ram: Ram 1
Uticaji u gredi: max T3= 27.38 / min T3= -195.90 kN

Opt. 12: komb temp 2



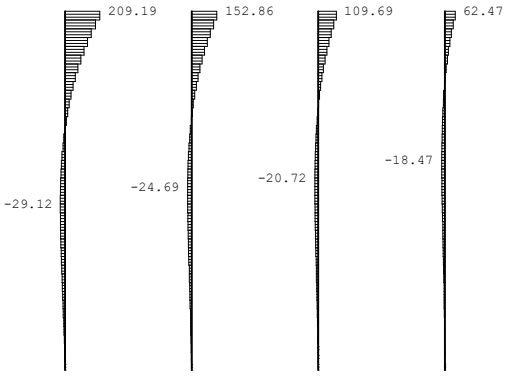
Ram: Ram 1
Uticaji u gredi: max T3= 24.97 / min T3= -202.66 kN

Opt. 13: komb temp 3



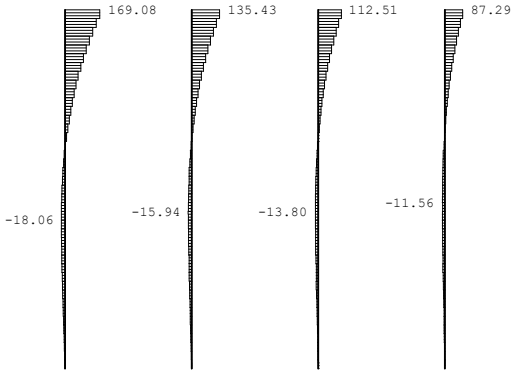
Ram: Ram 1
Uticaji u gredi: max T3= 215.95 / min T3= -26.70 kN

Opt. 14: komb temp 4



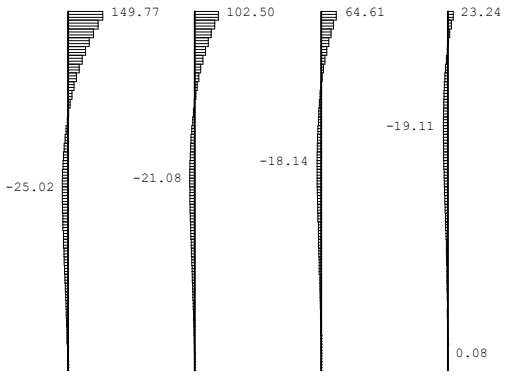
Ram: Ram 1
Uticaji u gredi: max T3= 209.19 / min T3= -29.12 kN

Opt. 15: komb temp 5



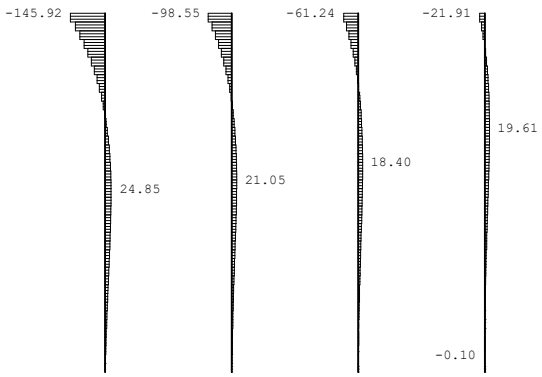
Ram: Ram 1
Uticaji u gredi: max T3= 169.08 / min T3= -23.67 kN

Opt. 16: komb temp 6



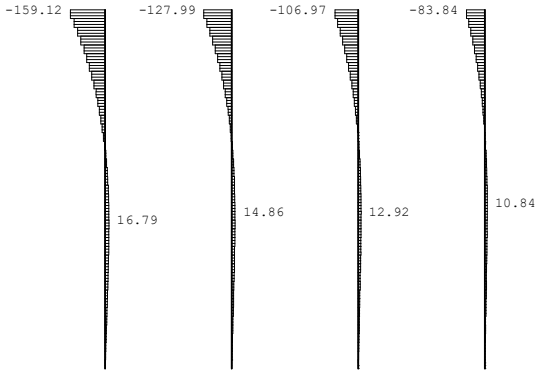
Ram: Ram 1
Uticaji u gredi: max T3= 149.77 / min T3= -25.02 kN

Opt. 17: komb temp 7



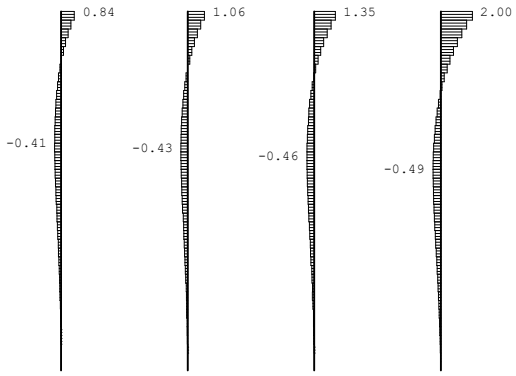
Ram: Ram 1
Uticaji u gredi: max T3= 24.85 / min T3= -145.92 kN

Opt. 18: komb temp 8



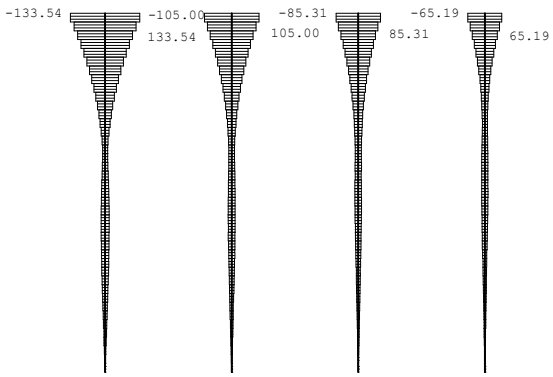
Ram: Ram 1
Uticaji u gredi: max T3= 23.66 / min T3= -159.12 kN

Opt. 19: BU



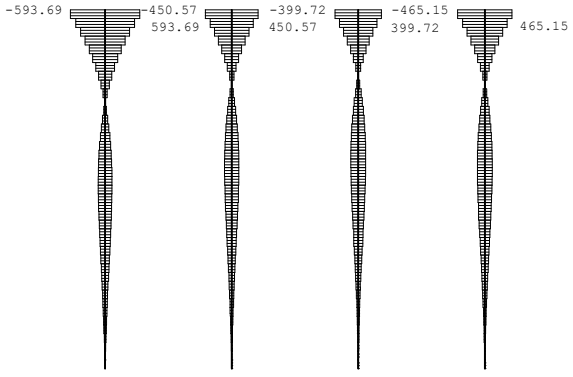
Ram: Ram 1
Uticaji u gredi: max T3= 2.00 / min T3= -2.21 kN

Opt. 20: Sx



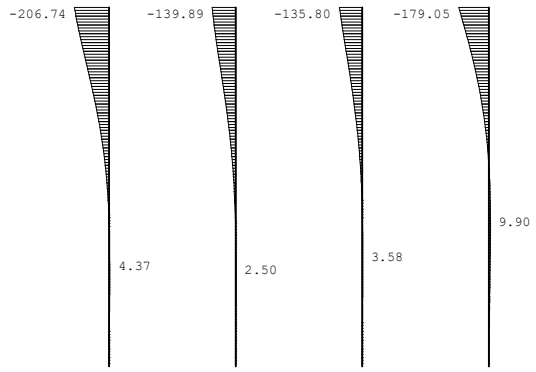
Ram: Ram 1
Uticaji u gredi: max T3= 133.54 / min T3= -133.54 kN

Opt. 21: Sy



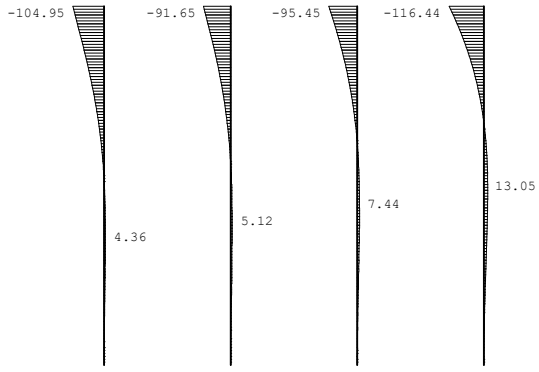
Ram: Ram 1
Uticaji u gredi: max T3= 593.69 / min T3= -593.69 kN

Opt. 1: sopstvena tezina (g)



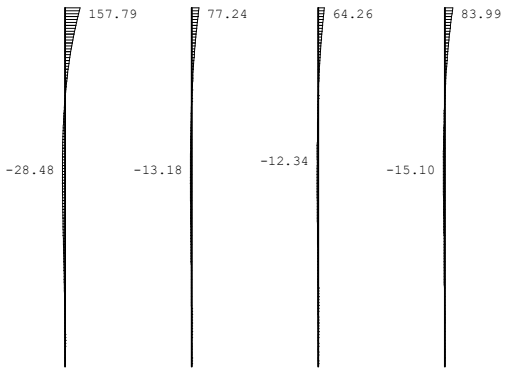
Ram: Ram 1
Uticaji u gredi: max M2= 109.85 / min M2= -206.74 kNm

Opt. 2: mrtav teret (Δg)



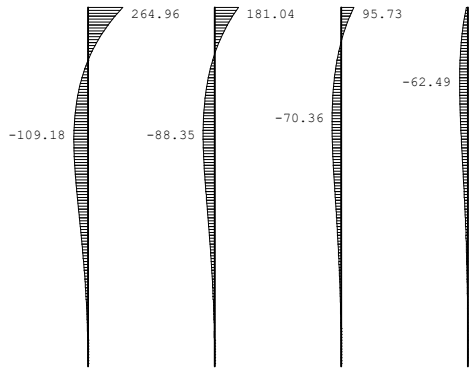
Ram: Ram 1
Uticaji u gredi: max M2= 62.75 / min M2= -116.44 kNm

Opt. 3: horizontalan pritisak tla



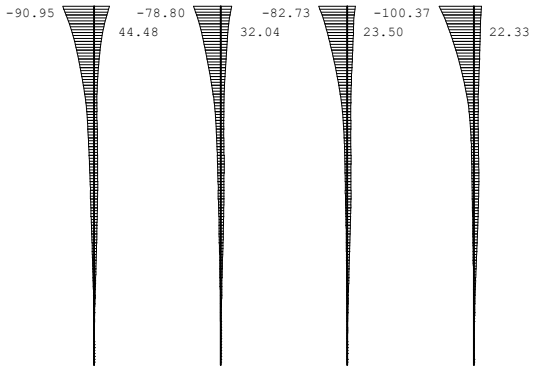
Ram: Ram 1
Uticaji u gredi: max M2= 157.79 / min M2= -365.06 kNm

Opt. 4: skupljanje



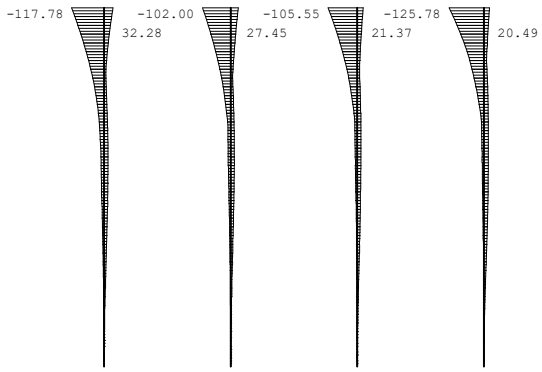
Ram: Ram 1
Uticaji u gredi: max M2= 264.96 / min M2= -135.38 kNm

Opt. 5: LM71



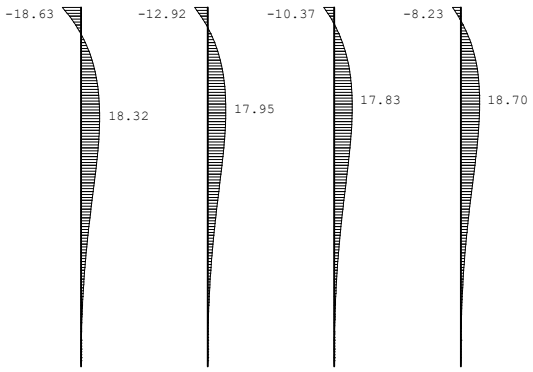
Ram: Ram 1
Uticaji u gredi: max M2= 63.32 / min M2= -100.37 kNm

Opt. 6: SW/2



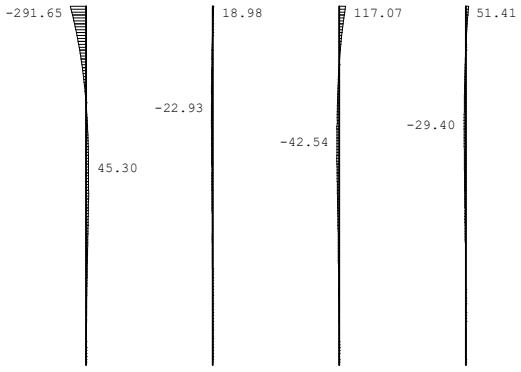
Ram: Ram 1
Uticaji u gredi: max M2= 59.27 / min M2= -125.78 kNm

Opt. 7: KP



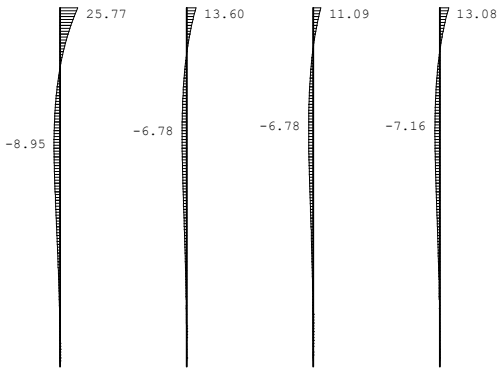
Ram: Ram 1
Uticaji u gredi: max M2= 18.70 / min M2= -34.43 kNm

Opt. 8: voz na nasipu ispred



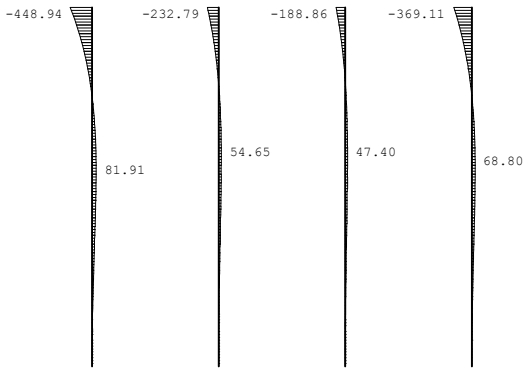
Ram: Ram 1
Uticaji u gredi: max M2= 642.49 / min M2= -432.55 kNm

Opt. 9: voz na nasipu iza



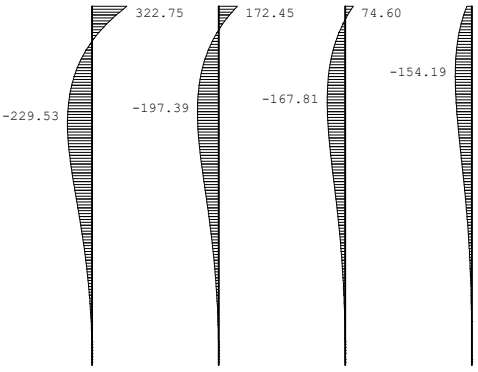
Ram: Ram 1
Uticaji u gredi: max M2= 25.77 / min M2= -50.79 kNm

Opt. 10: voz ispod



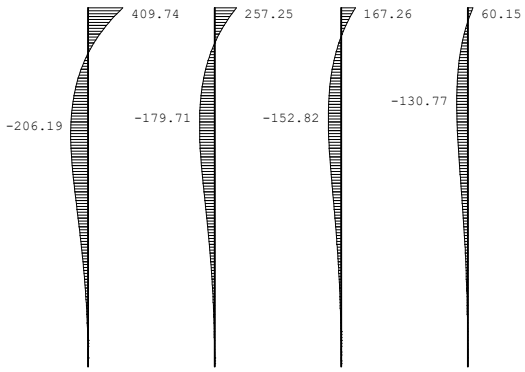
Ram: Ram 1
Uticaji u gredi: max M2= 479.74 / min M2= -712.39 kNm

Opt. 11: komb temp 1



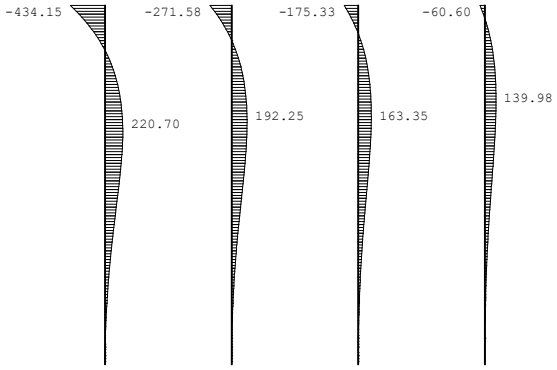
Ram: Ram 1
Uticaji u gredi: max M2= 322.75 / min M2= -229.53 kNm

Opt. 12: komb temp 2



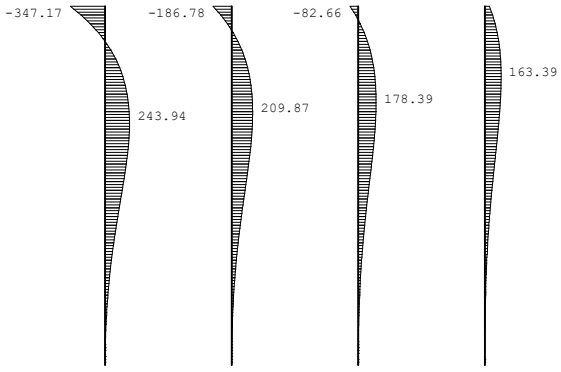
Ram: Ram 1
Uticaji u gredi: max M2= 409.74 / min M2= -206.19 kNm

Opt. 13: komb temp 3



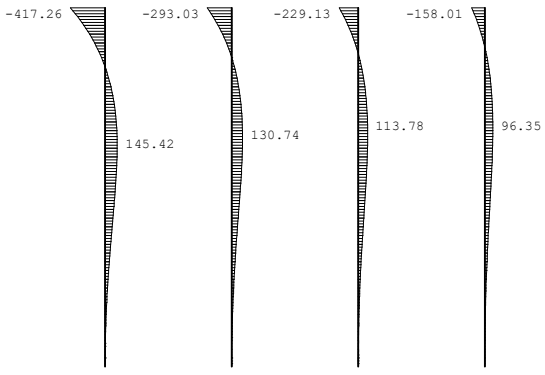
Ram: Ram 1
Uticaji u gredi: max M2= 220.70 / min M2= -434.15 kNm

Opt. 14: komb temp 4



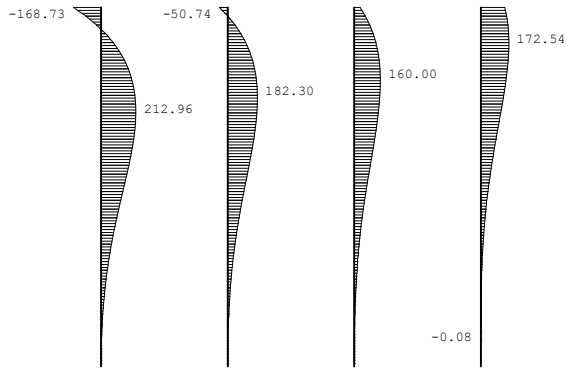
Ram: Ram 1
Uticaji u gredi: max M2= 243.94 / min M2= -347.17 kNm

Opt. 15: komb temp 5



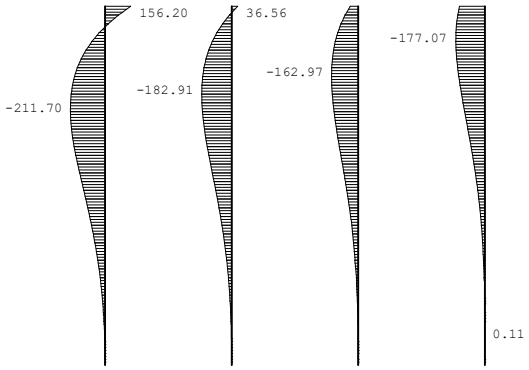
Ram: Ram 1
Uticaji u gredi: max M2= 145.42 / min M2= -417.26 kNm

Opt. 16: komb temp 6



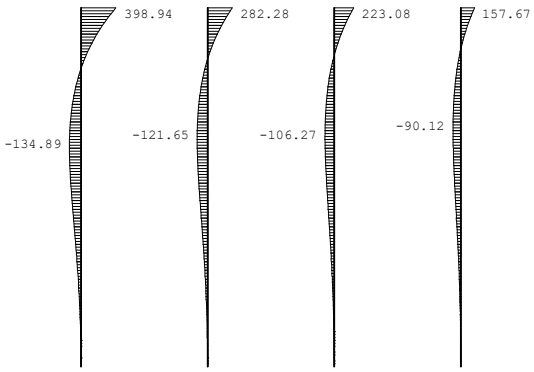
Ram: Ram 1
Uticaji u gredi: max M2= 212.96 / min M2= -168.73 kNm

Opt. 17: komb temp 7



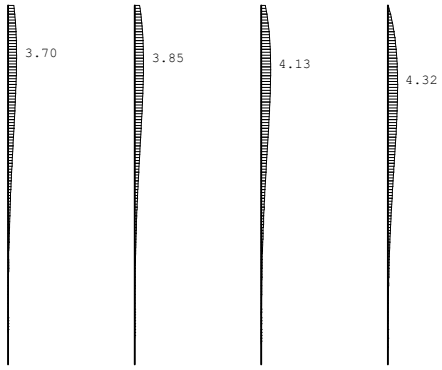
Ram: Ram 1
Uticaji u gredi: max M2= 156.20 / min M2= -211.70 kNm

Opt. 18: komb temp 8



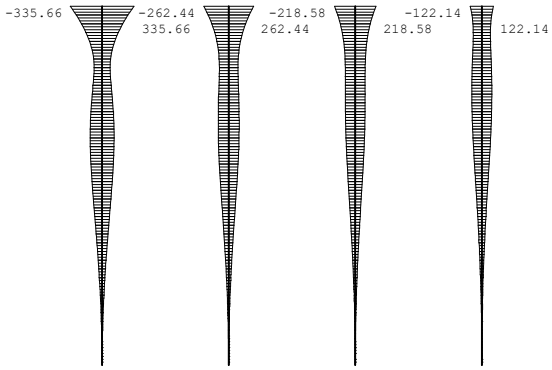
Ram: Ram 1
Uticaji u gredi: max M2= 398.94 / min M2= -137.84 kNm

Opt. 19: BU



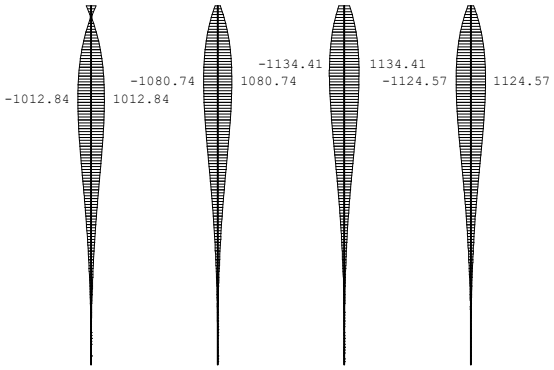
Ram: Ram 1
Uticaji u gredi: max M2= 4.32 / min M2= -15.26 kNm

Opt. 20: Sx



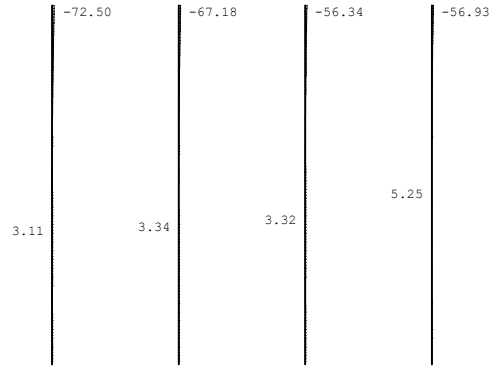
Ram: Ram 1
Uticaji u gredi: max M2= 365.83 / min M2= -365.83 kNm

Opt. 21: Sy



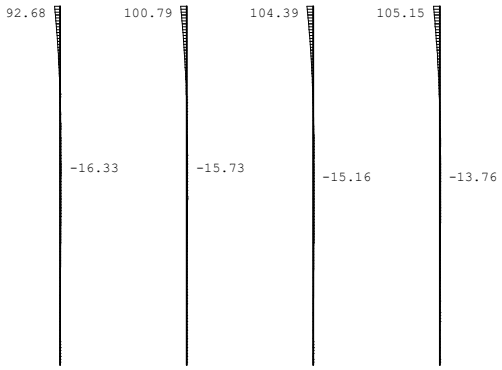
Ram: Ram 1
Uticaji u gredi: max M2= 2654.87 / min M2= -2654.87 kNm

Opt. 1: sopstvena tezina (g)



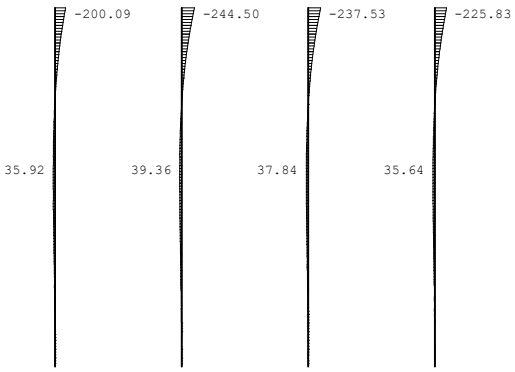
Ram: Ram 1
Uticaji u gredi: max M3= 1216.01 / min M3= -349.88 kNm

Opt. 2: mrtav teret (Δg)



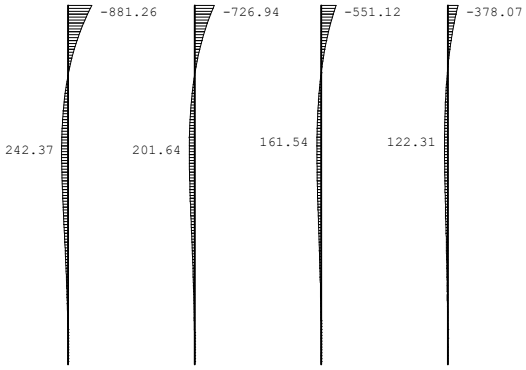
Ram: Ram 1
Uticaji u gredi: max M3= 576.52 / min M3= -140.79 kNm

Opt. 3: horizontalan pritisak tla



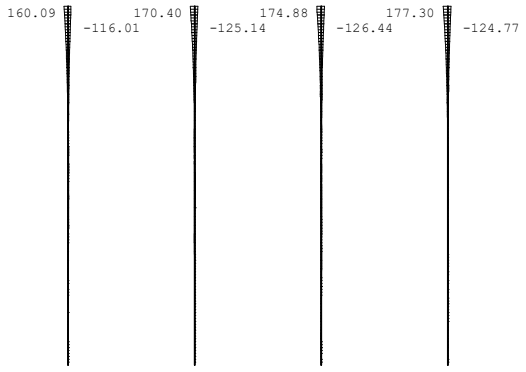
Ram: Ram 1
Uticaji u gredi: max M3= 356.81 / min M3= -663.06 kNm

Opt. 4: skupljanje



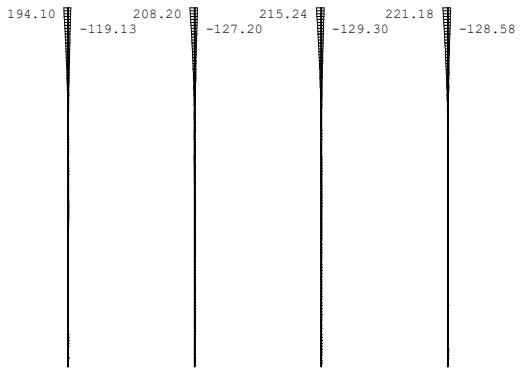
Ram: Ram 1
Uticaji u gredi: max M3= 1290.59 / min M3= -881.26 kNm

Opt. 5: LM71



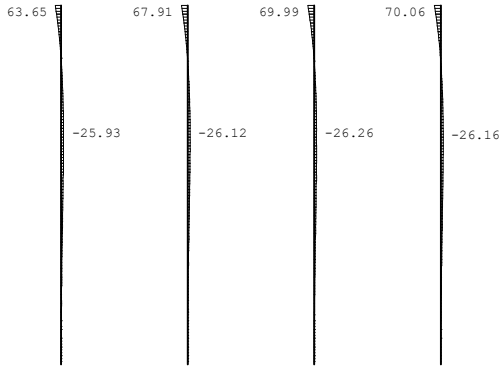
Ram: Ram 1
Uticaji u gredi: max M3= 1356.05 / min M3= -605.53 kNm

Opt. 6: SW/2



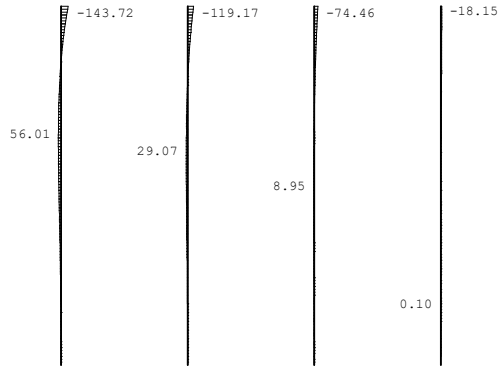
Ram: Ram 1
Uticaji u gredi: max M3= 1536.08 / min M3= -455.06 kNm

Opt. 7: KP



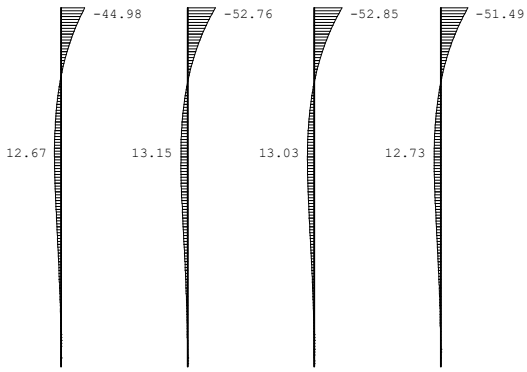
Ram: Ram 1
Uticaji u gredi: max M3= 70.26 / min M3= -377.53 kNm

Opt. 8: voz na nasipu ispred



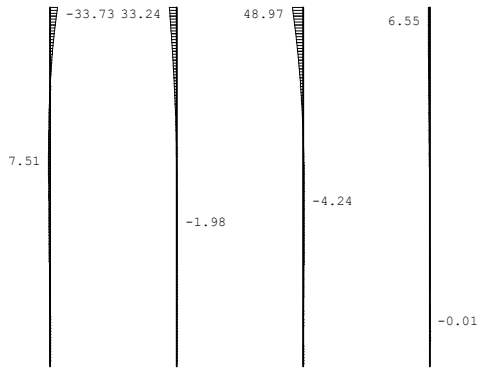
Ram: Ram 1
Uticaji u gredi: max M3= 705.18 / min M3= -363.01 kNm

Opt. 9: voz na nasipu iza



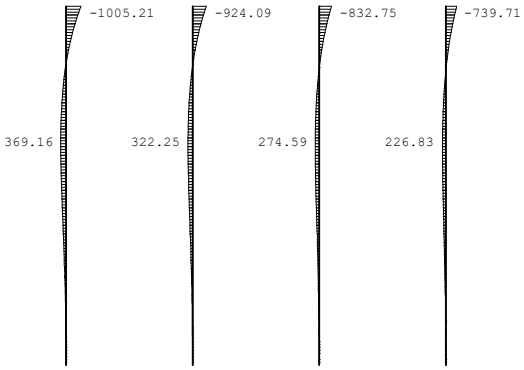
Ram: Ram 1
Uticaji u gredi: max M3= 66.10 / min M3= -53.15 kNm

Opt. 10: voz ispod



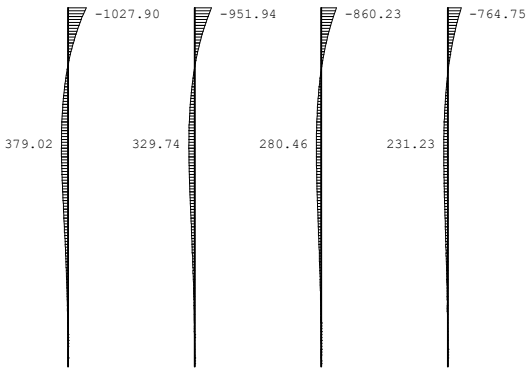
Ram: Ram 1
Uticaji u gredi: max M3= 48.97 / min M3= -157.82 kNm

Opt. 11: komb temp 1



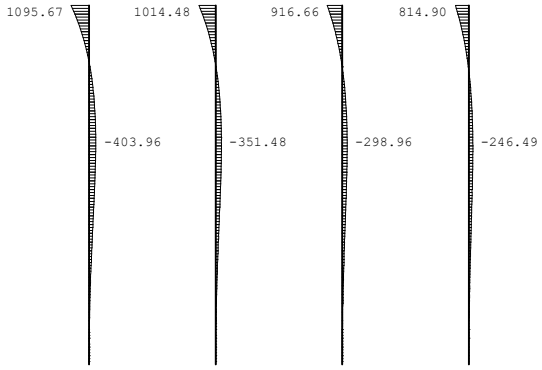
Ram: Ram 1
Uticaji u gredi: max M3= 2363.49 / min M3= -1005.21 kNm

Opt. 12: komb temp 2



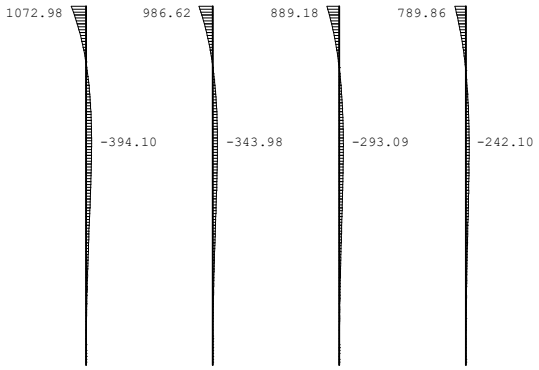
Ram: Ram 1
Uticaji u gredi: max M3= 1969.55 / min M3= -1027.90 kNm

Opt. 13: komb temp 3



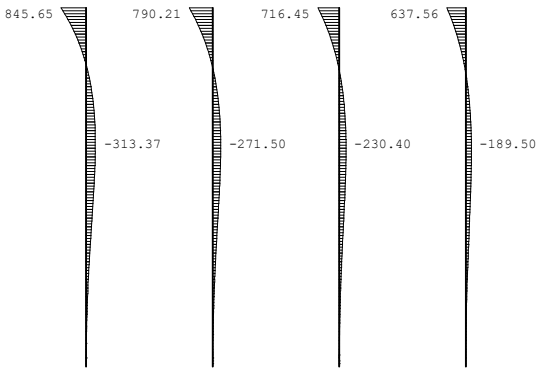
Ram: Ram 1
Uticaji u gredi: max M3= 1095.67 / min M3= -2113.98 kNm

Opt. 14: komb temp 4



Ram: Ram 1
Uticaji u gredi: max M3= 1072.98 / min M3= -2507.93 kNm

Opt. 15: komb temp 5

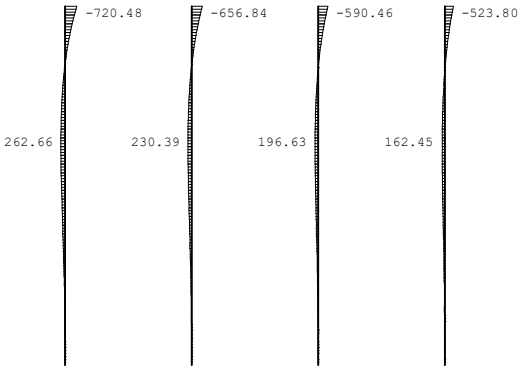


Ram: Ram 1
Uticaji u gredi: max M3= 845.65 / min M3= -1170.44 kNm

Opt. 16: komb temp 6

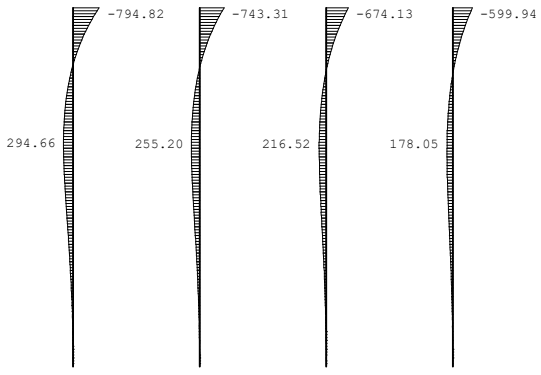
Ram: Ram 1
Uticaji u gredi: max M3= 780.84 / min M3= -2296.00 kNm

Opt. 17: komb temp 7



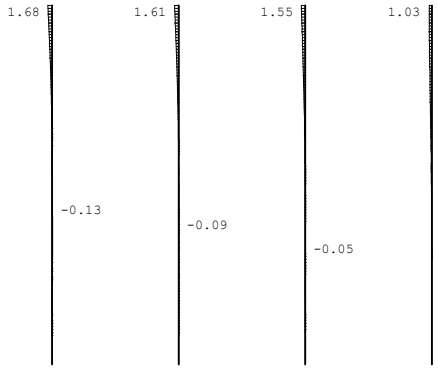
Ram: Ram 1
Uticaji u gredi: max M3= 2133.20 / min M3= -720.48 kNm

Opt. 18: komb temp 8



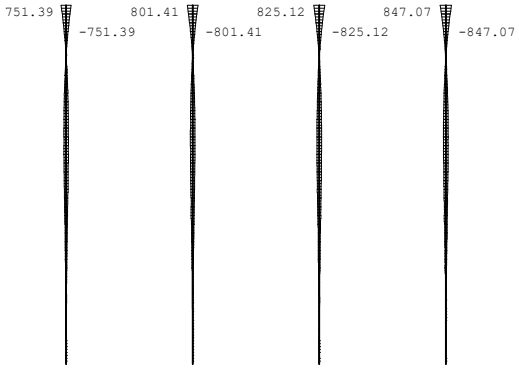
Ram: Ram 1
Uticaji u gredi: max M3= 1062.11 / min M3= -794.82 kNm

Opt. 19: BU



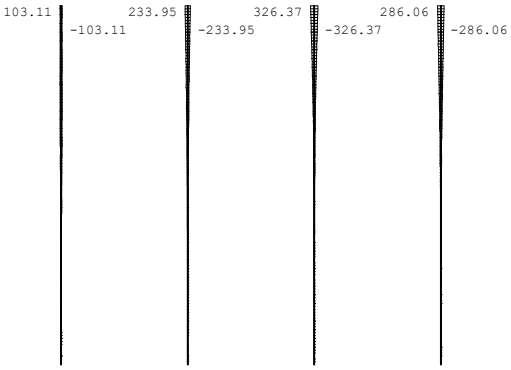
Ram: Ram 1
Uticaji u gredi: max M3= 13.63 / min M3= -1.26 kNm

Opt. 20: Sx



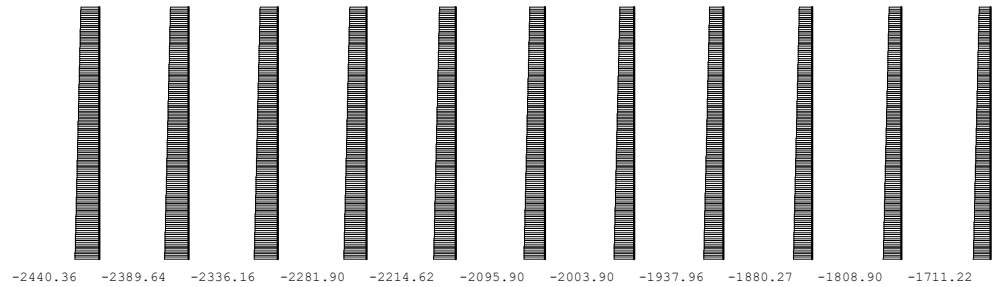
Ram: Ram 1
Uticaji u gredi: max M3= 5201.87 / min M3= -5201.87 kNm

Opt. 21: Sy



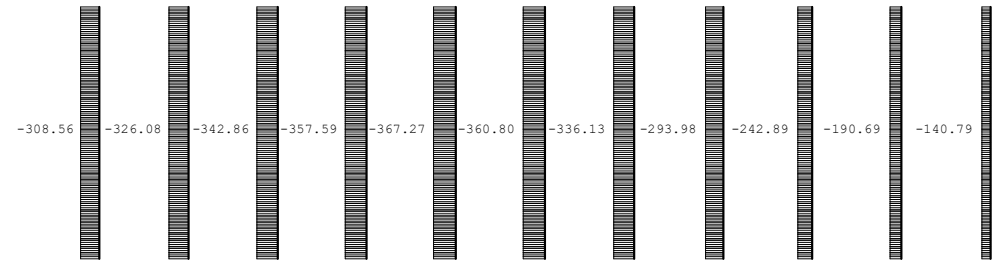
Ram: Ram 1
Uticaji u gredi: max M3= 3082.97 / min M3= -3082.97 kNm

Opt. 1: sopstvena tezina (g)



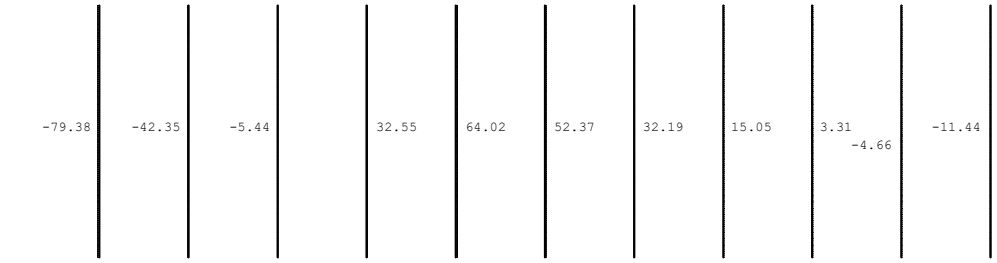
Ram: Ram 2
Uticaji u gredi: max N1= 300.95 / min N1= -2440.36 kN

Opt. 2: mrtav teret (Δg)



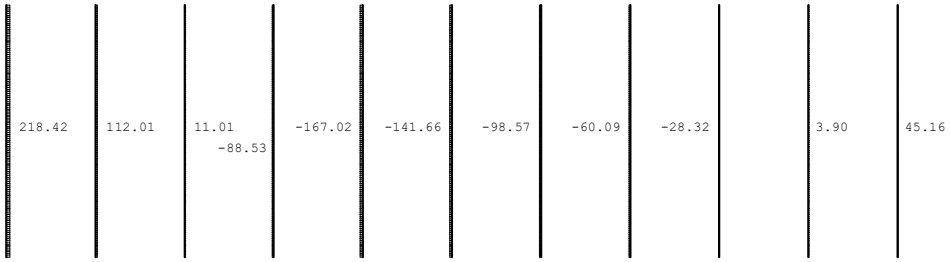
Ram: Ram 2
Uticaji u gredi: max N1= 190.78 / min N1= -404.78 kN

Opt. 3: horizontalan pritisak tla



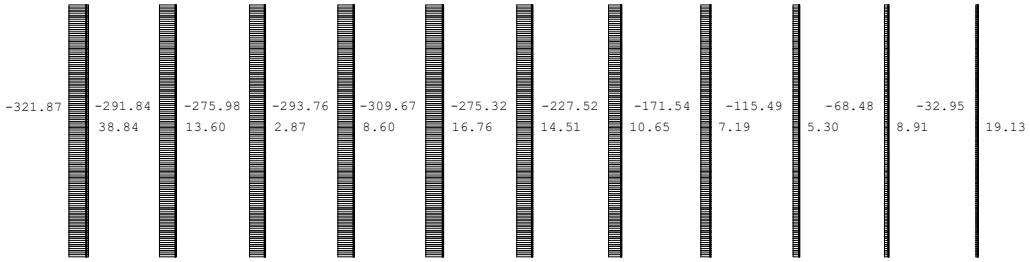
Ram: Ram 2
Uticaji u gredi: max N1= 84.94 / min N1= -1075.10 kN

Opt. 4: skupljanje



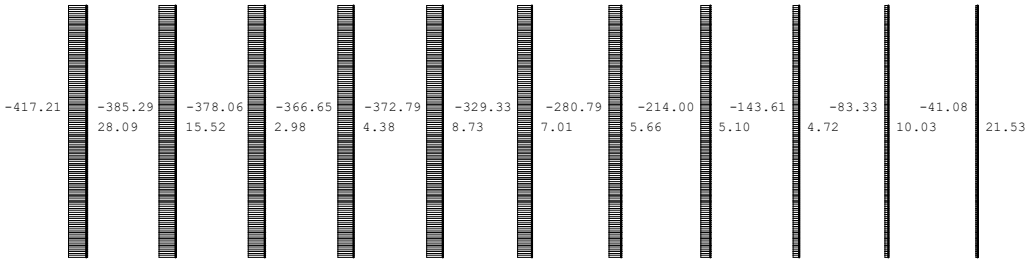
Ram: Ram 2
Uticaji u gredi: max N1= 1574.71 / min N1= -167.02 kN

Opt. 5: LM71



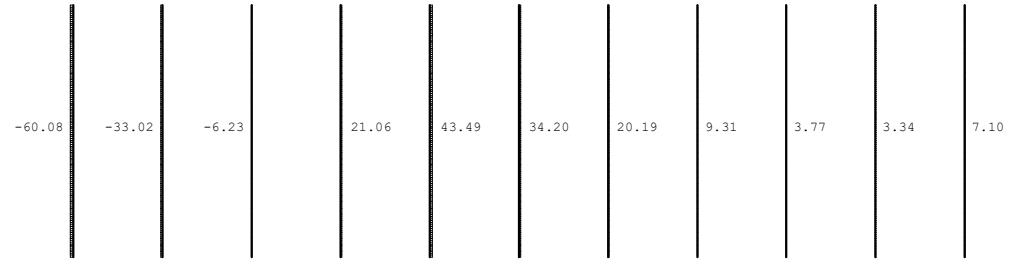
Ram: Ram 2
Uticaji u gredi: max N1= 445.68 / min N1= -374.93 kN

Opt. 6: SW/2



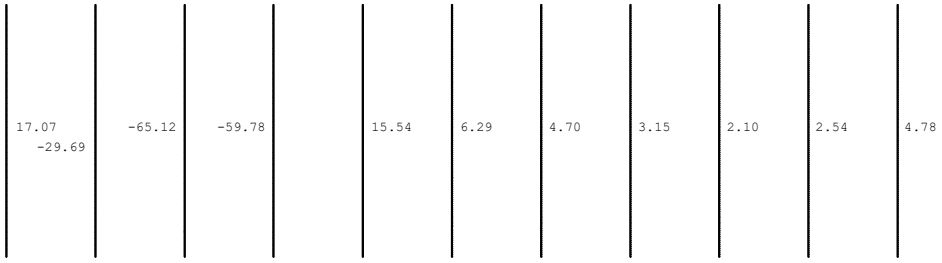
Ram: Ram 2
Uticaji u gredi: max N1= 563.84 / min N1= -447.62 kN

Opt. 7: KP



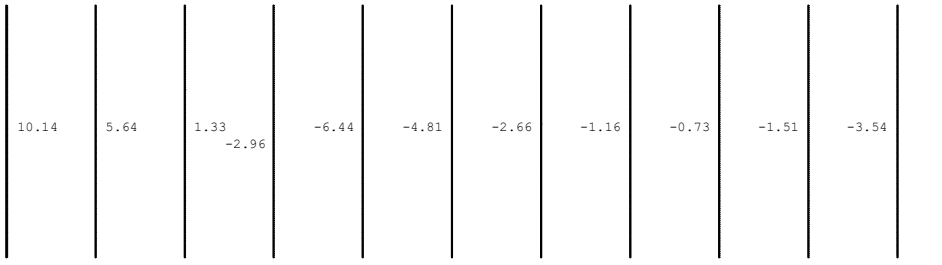
Ram: Ram 2
Uticaji u gredi: max N1= 451.68 / min N1= -192.40 kN

Opt. 8: voz na nasipu ispred



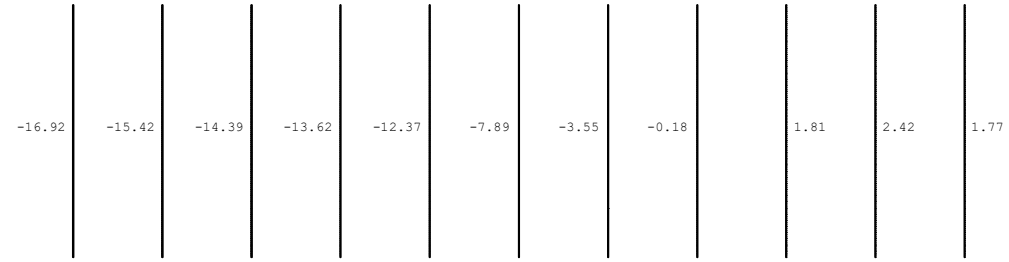
Ram: Ram 2
Uticaji u gredi: max N1= 3032.03 / min N1= -1078.82 kN

Opt. 9: voz na nasipu iza



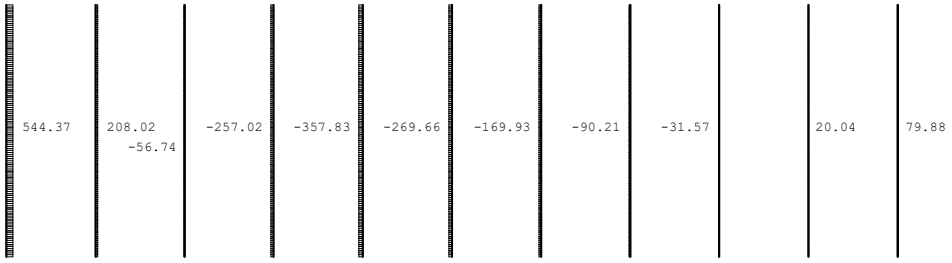
Ram: Ram 2
Uticaji u gredi: max N1= 10.14 / min N1= -238.32 kN

Opt. 10: voz ispod



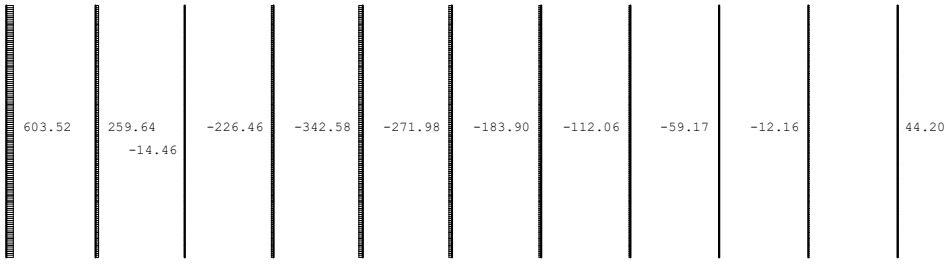
Ram: Ram 2
Uticaji u gredi: max N1= 534.54 / min N1= -141.41 kN

Opt. 11: komb temp 1



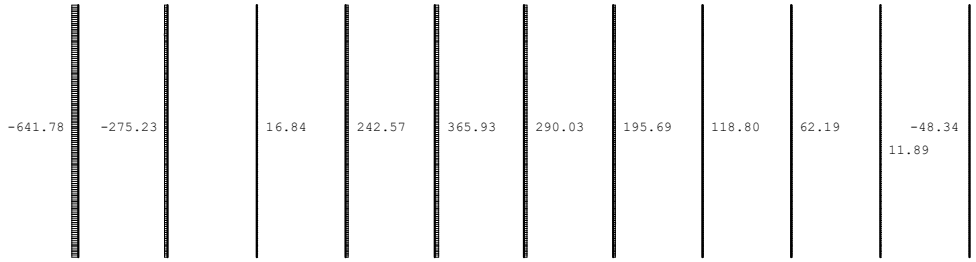
Ram: Ram 2
Uticaji u gredi: max N1= 2124.44 / min N1= -433.65 kN

Opt. 12: komb temp 2



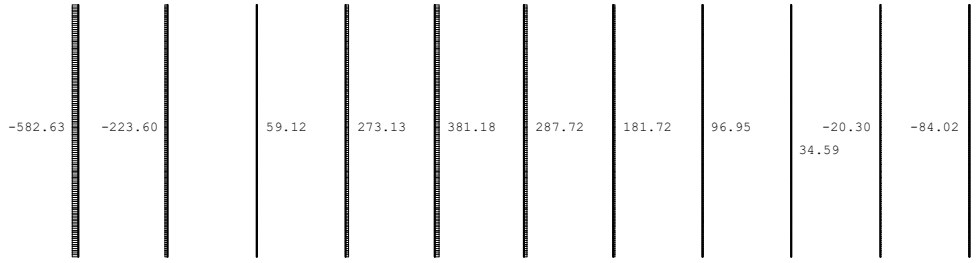
Ram: Ram 2
Uticaji u gredi: max N1= 2145.61 / min N1= -451.43 kN

Opt. 13: komb temp 3



Ram: Ram 2
Uticaji u gredi: max N1= 480.93 / min N1= -2287.95 kN

Opt. 14: komb temp 4

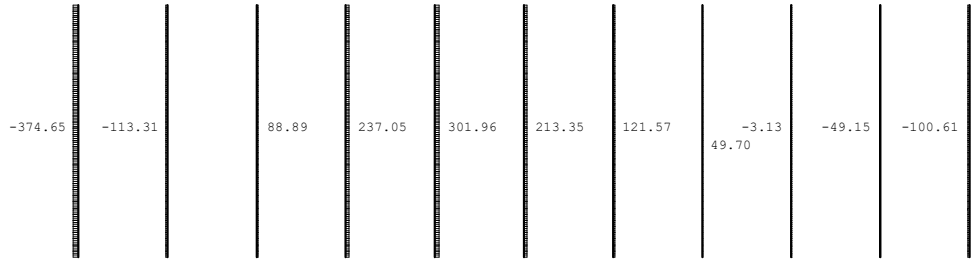


Ram: Ram 2
Uticaji u gredi: max N1= 463.16 / min N1= -2266.78 kN

Opt. 15: komb temp 5

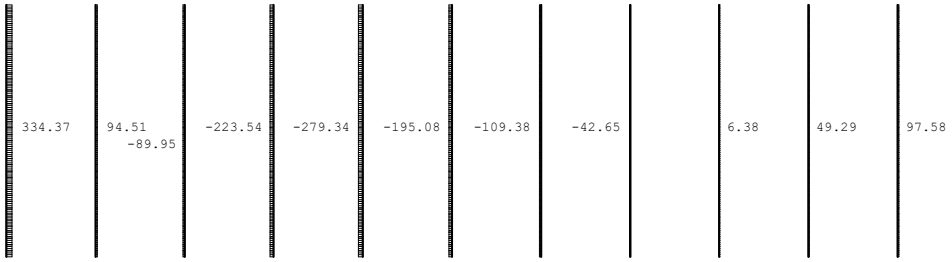
Ram: Ram 2
Uticaji u gredi: max N1= 379.43 / min N1= -1738.27 kN

Opt. 16: komb temp 6



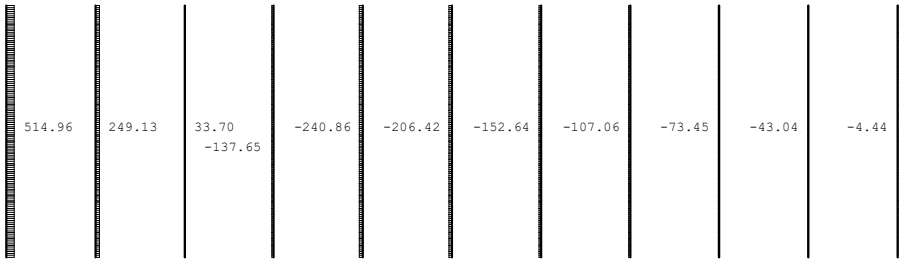
Ram: Ram 2
Uticaji u gredi: max N1= 328.64 / min N1= -1677.77 kN

Opt. 17: komb temp 7



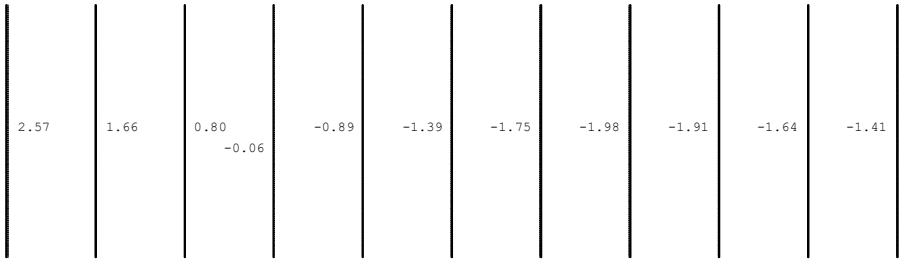
Ram: Ram 2
Uticaji u gredi: max N1= 1465.84 / min N1= -279.34 kN

Opt. 18: komb temp 8



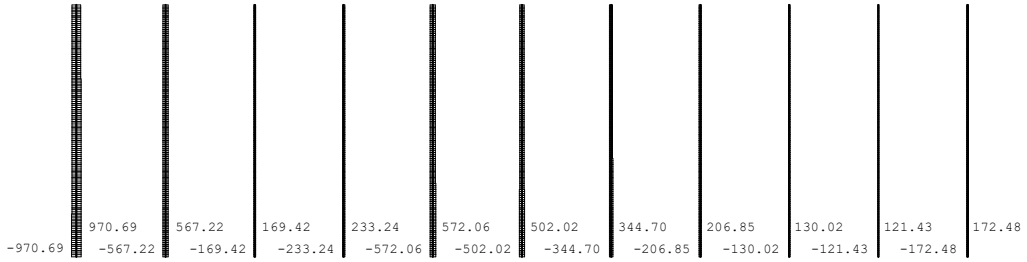
Ram: Ram 2
Uticaji u gredi: max N1= 1631.52 / min N1= -357.30 kN

Opt. 19: BU



Ram: Ram 2
Uticaji u gredi: max N1= 42.46 / min N1= -26.03 kN

Opt. 20: Sx

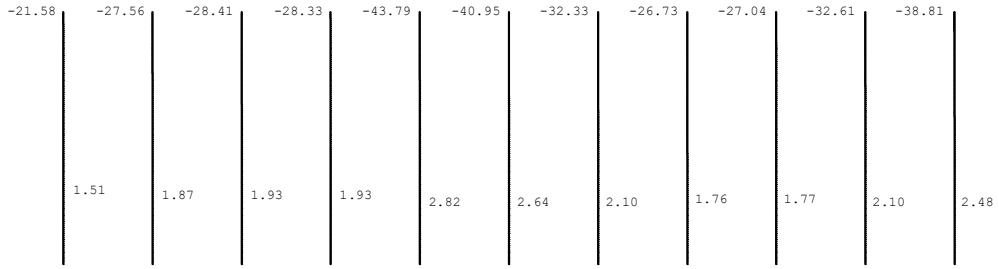


Ram: Ram 2
Uticaji u gredi: max N1= 5009.09 / min N1= -5009.09 kN

Opt. 21: Sy

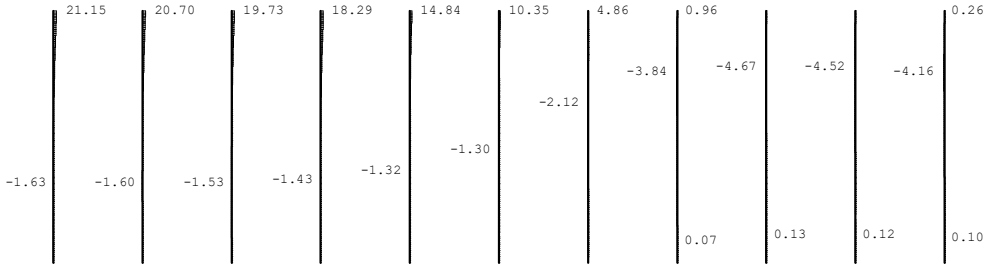
Ram: Ram 2
Uticaji u gredi: max N1= 3949.80 / min N1= -3949.80 kN

Opt. 1: sopstvena tezina (g)



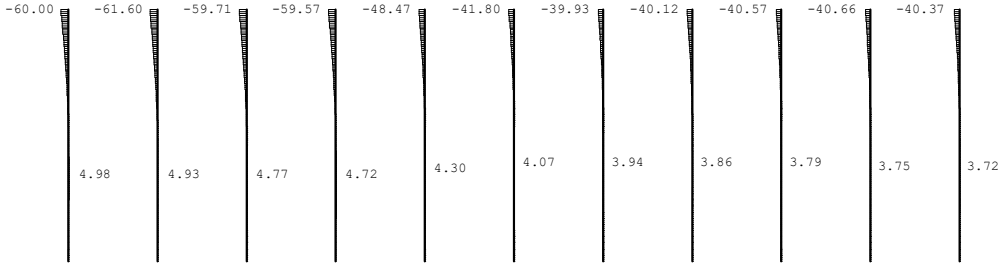
Ram: Ram 2
Uticaji u gredi: max T2= 1534.42 / min T2= -459.68 kN

Opt. 2: mrtav teret (Δg)



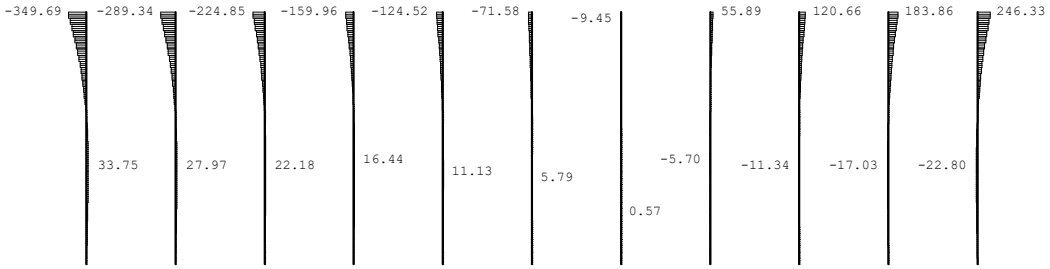
Ram: Ram 2
Uticaji u gredi: max T2= 174.23 / min T2= -98.01 kN

Opt. 3: horizontalan pritisak tla



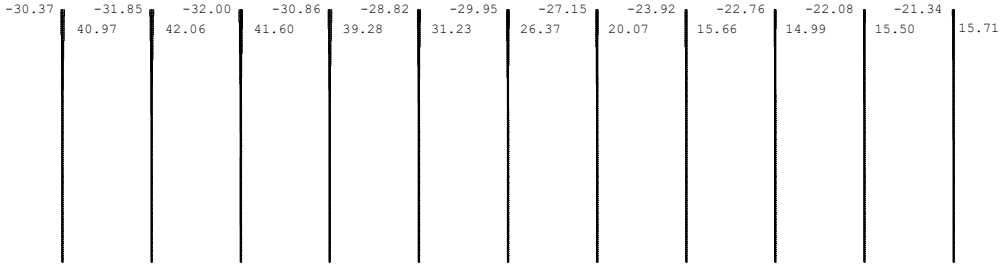
Ram: Ram 2
Uticaji u gredi: max T2= 200.01 / min T2= -94.08 kN

Opt. 4: skupljanje



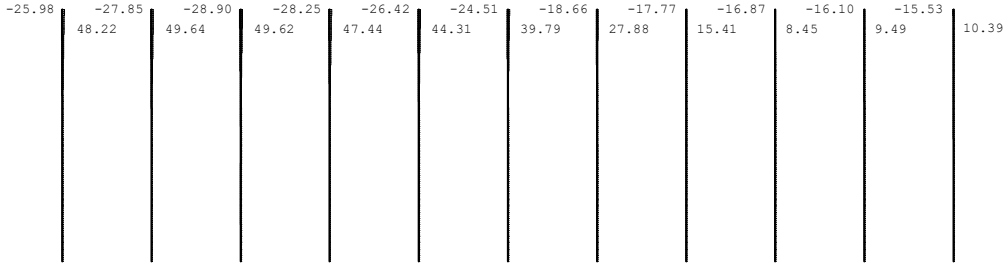
Ram: Ram 2
Uticaji u gredi: max T2= 475.74 / min T2= -380.65 kN

Opt. 5: LM71



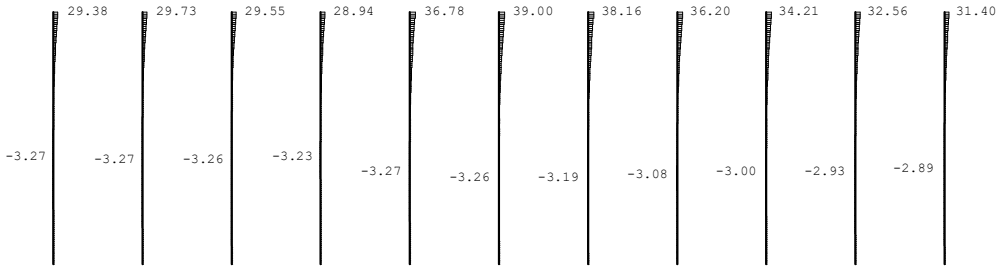
Ram: Ram 2
Uticaji u gredi: max T2= 505.64 / min T2= -336.40 kN

Opt. 6: SW/2



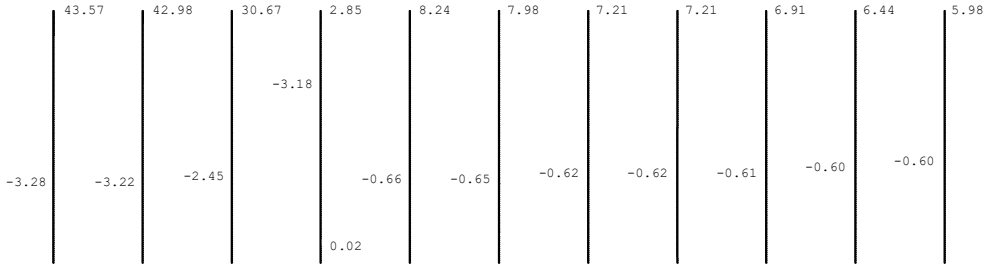
Ram: Ram 2
Uticaji u gredi: max T2= 632.76 / min T2= -429.52 kN

Opt. 7: KP



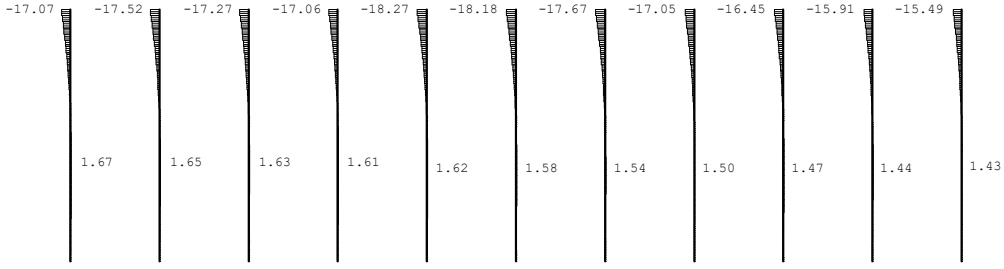
Ram: Ram 2
Uticaji u gredi: max T2= 123.39 / min T2= -167.62 kN

Opt. 8: voz na nasipu ispred



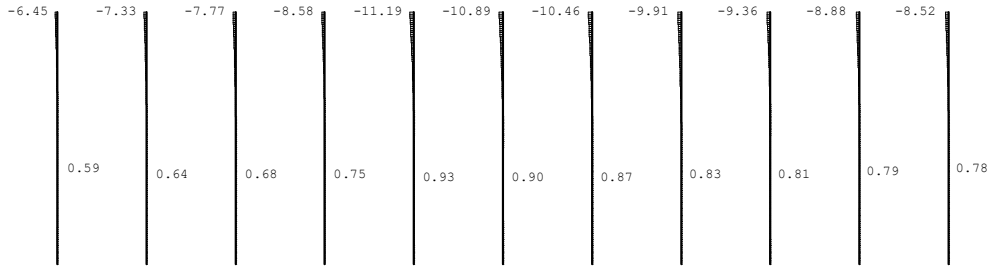
Ram: Ram 2
Uticaji u gredi: max T2= 1288.72 / min T2= -1476.22 kN

Opt. 9: voz na nasipu iza



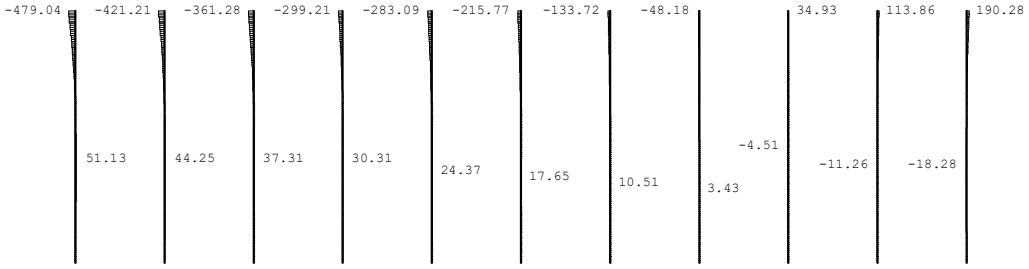
Ram: Ram 2
Uticaji u gredi: max T2= 46.37 / min T2= -19.29 kN

Opt. 10: voz ispod



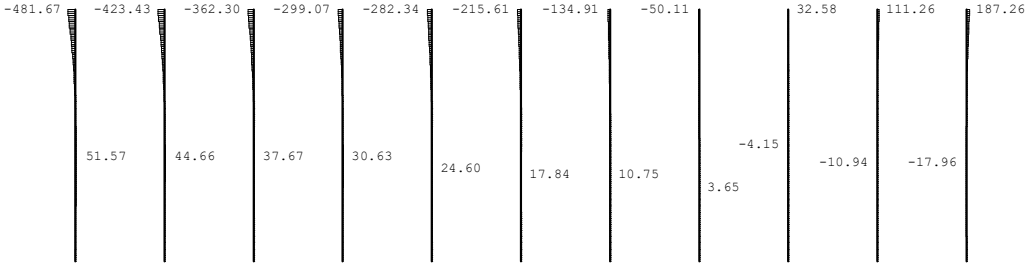
Ram: Ram 2
Uticaji u gredi: max T2= 70.18 / min T2= -51.17 kN

Opt. 11: komb temp 1



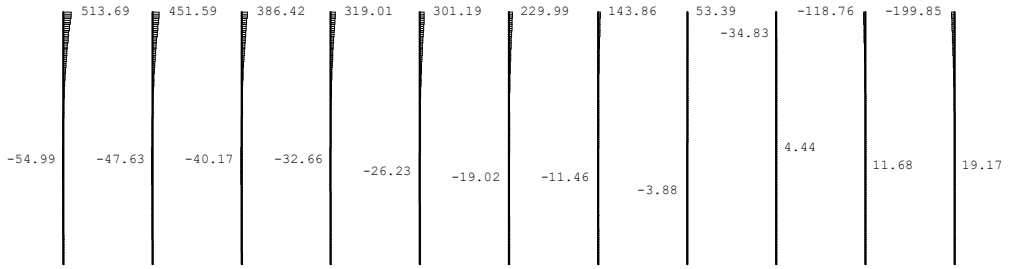
Ram: Ram 2
Uticaji u gredi: max T2= 1713.94 / min T2= -509.53 kN

Opt. 12: komb temp 2



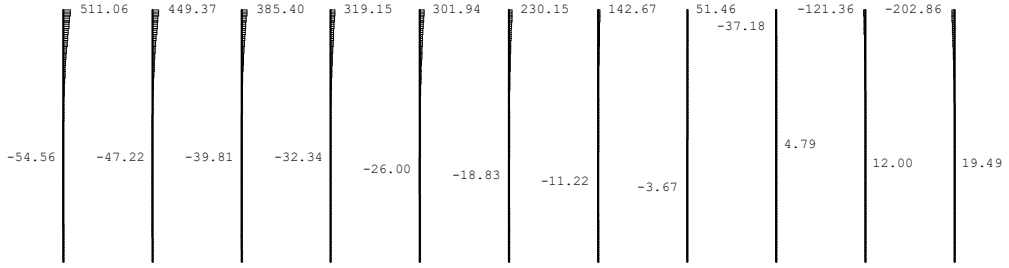
Ram: Ram 2
Uticaji u gredi: max T2= 1553.03 / min T2= -539.36 kN

Opt. 13: komb temp 3



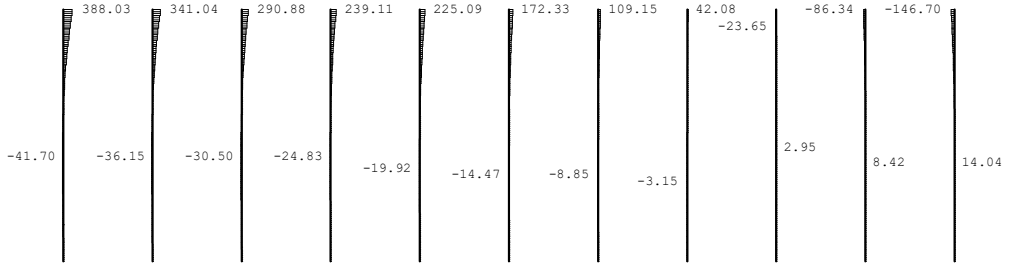
Ram: Ram 2
Uticaji u gredi: max T2= 574.32 / min T2= -1661.93 kN

Opt. 14: komb temp 4



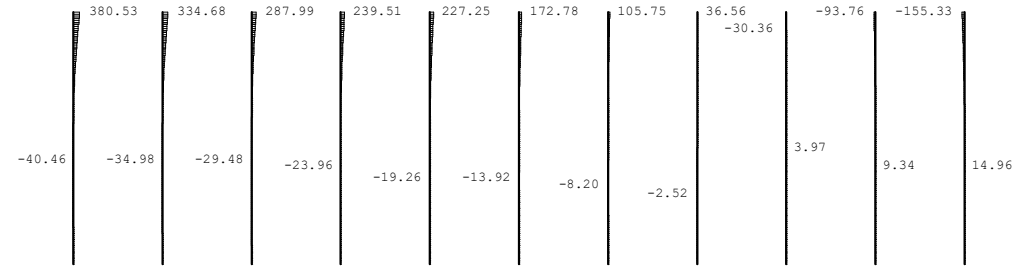
Ram: Ram 2
Uticaji u gredi: max T2= 544.50 / min T2= -1822.84 kN

Opt. 15: komb temp 5



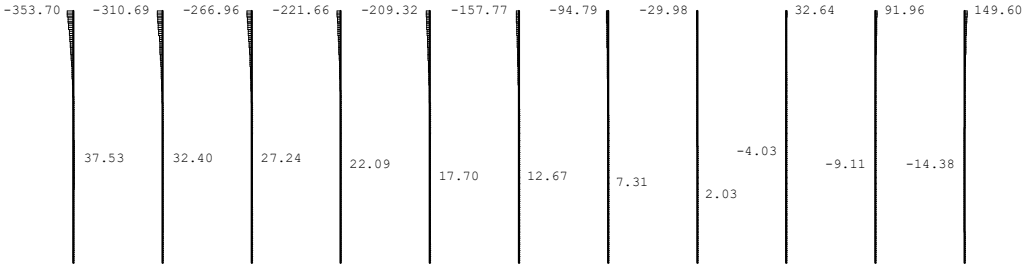
Ram: Ram 2
Uticaji u gredi: max T2= 493.51 / min T2= -1076.92 kN

Opt. 16: komb temp 6



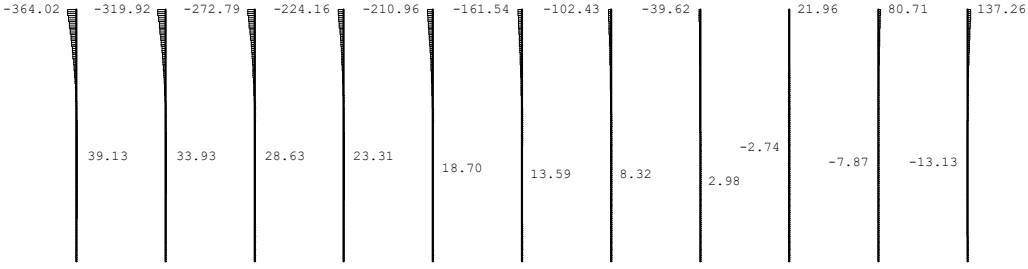
Ram: Ram 2
Uticaji u gredi: max T2= 380.53 / min T2= -1536.66 kN

Opt. 17: komb temp 7



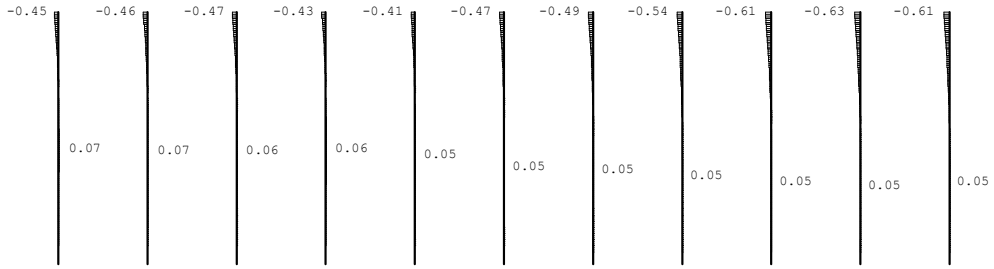
Ram: Ram 2
Uticaji u gredi: max T2= 1440.23 / min T2= -353.70 kN

Opt. 18: komb temp 8



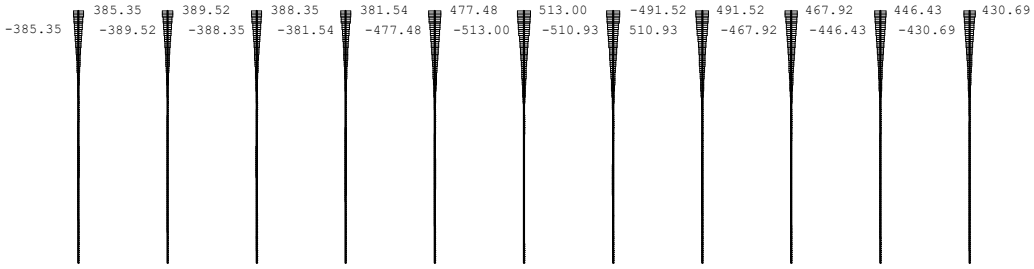
Ram: Ram 2
Uticaji u gredi: max T2= 995.24 / min T2= -470.16 kN

Opt. 19: BU



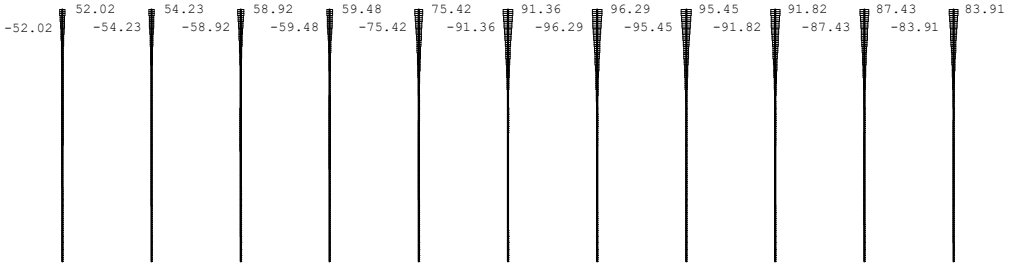
Ram: Ram 2
Uticaji u gredi: max T2= 2.65 / min T2= -0.90 kN

Opt. 20: Sx



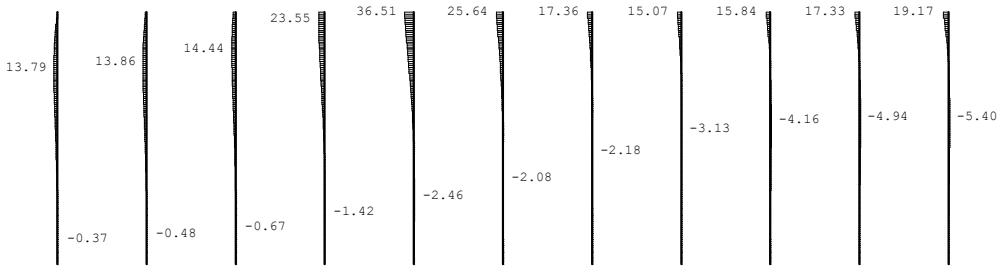
Ram: Ram 2
Uticaji u gredi: max T2= 1886.93 / min T2= -1886.93 kN

Opt. 21: Sy



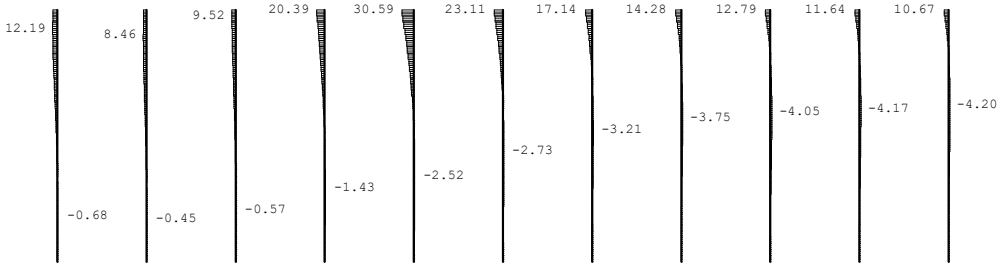
Ram: Ram 2
Uticaji u gredi: max T2= 482.16 / min T2= -482.16 kN

Opt. 1: sopstvena tezina (g)



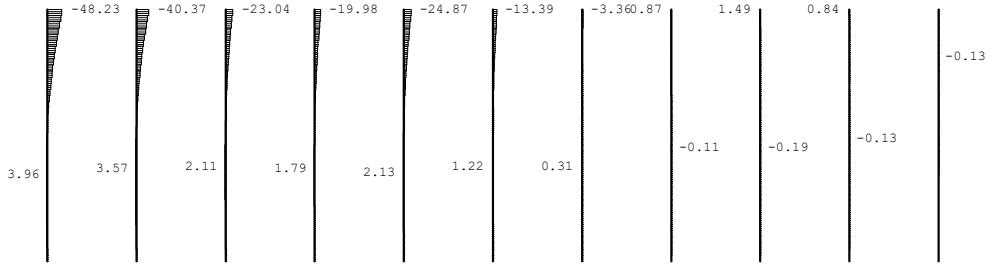
Ram: Ram 2
Uticaji u gredi: max T3= 94.85 / min T3= -70.67 kN

Opt. 2: mrtav teret (Δg)



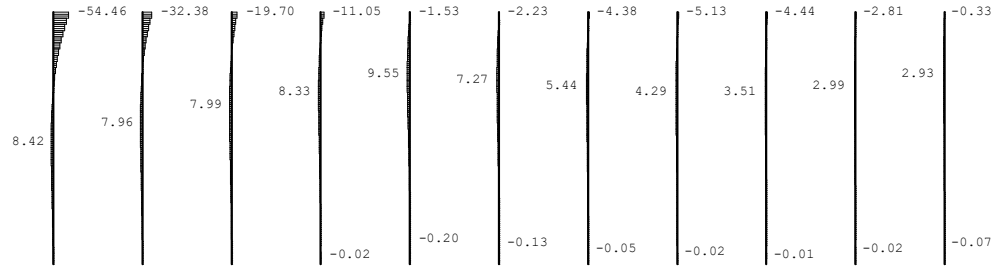
Ram: Ram 2
Uticaji u gredi: max T3= 63.30 / min T3= -48.47 kN

Opt. 3: horizontalan pritisak tla



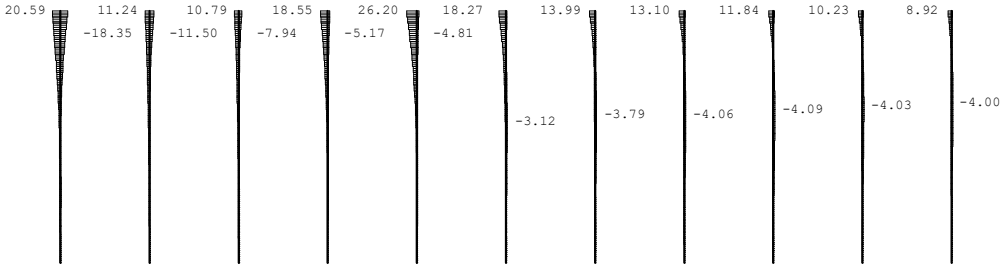
Ram: Ram 2
Uticaji u gredi: max T3= 57.63 / min T3= -81.93 kN

Opt. 4: skupljanje



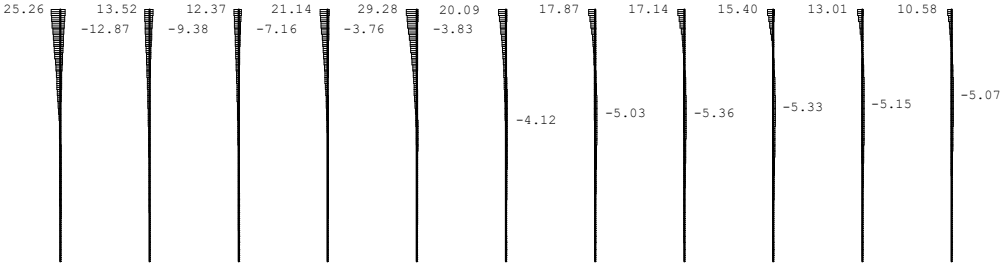
Ram: Ram 2
Uticaji u gredi: max T3= 88.38 / min T3= -54.46 kN

Opt. 5: LM71



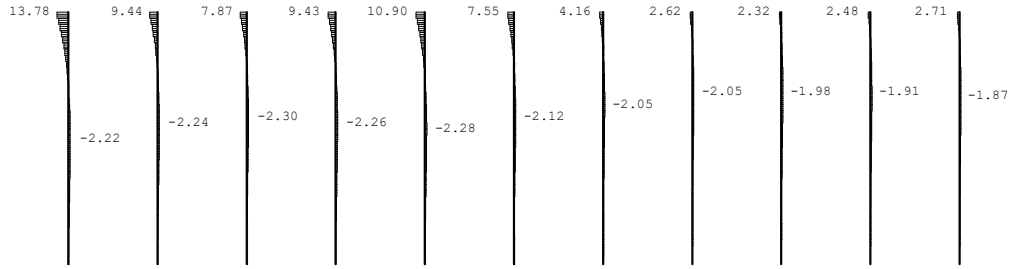
Ram: Ram 2
Uticaji u gredi: max T3= 62.33 / min T3= -42.30 kN

Opt. 6: SW/2



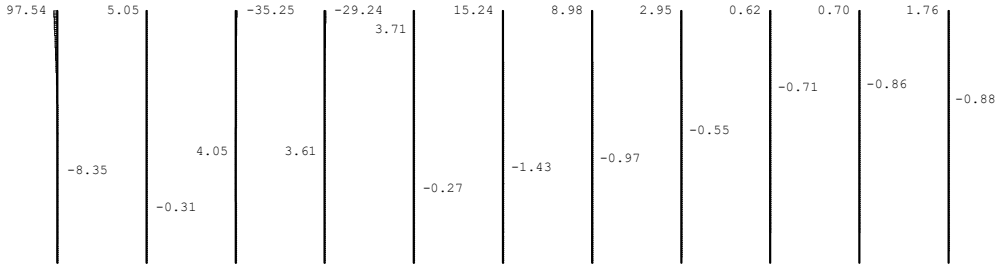
Ram: Ram 2
Uticaji u gredi: max T3= 66.91 / min T3= -50.28 kN

Opt. 7: KP



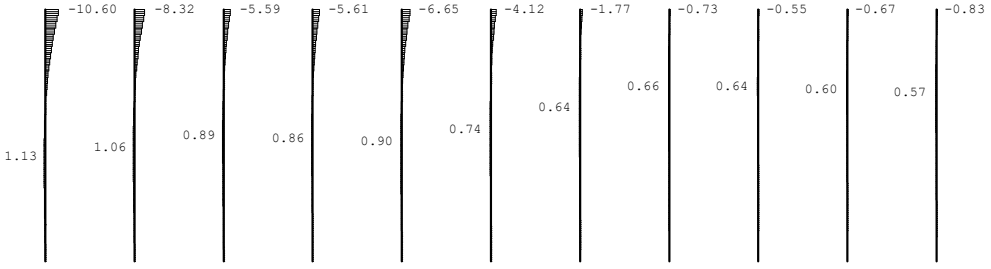
Ram: Ram 2
Uticaji u gredi: max T3= 29.92 / min T3= -21.50 kN

Opt. 8: voz na nasipu ispred



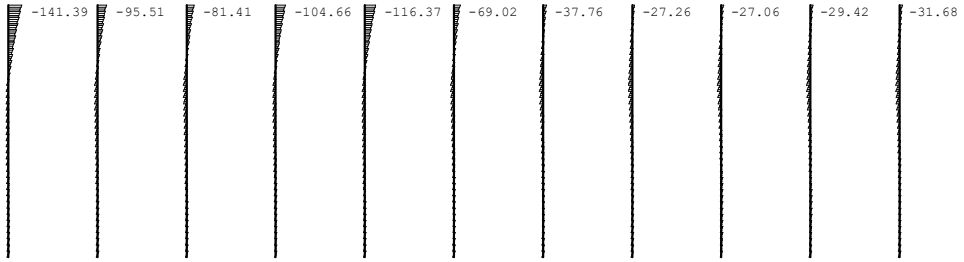
Ram: Ram 2
Uticaji u gredi: max T3= 673.40 / min T3= -96.99 kN

Opt. 9: voz na nasipu iza



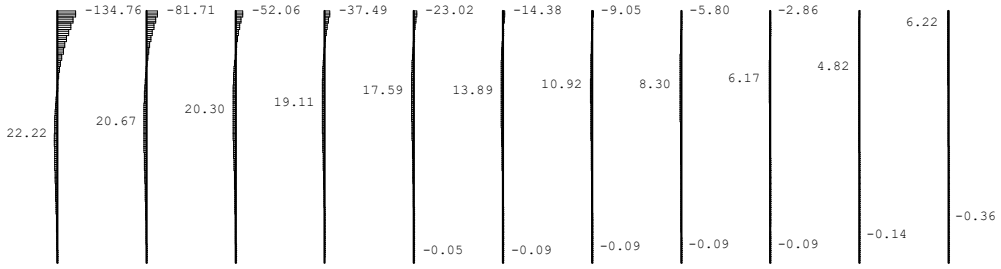
Ram: Ram 2
Uticaji u gredi: max T3= 11.83 / min T3= -19.92 kN

Opt. 10: voz ispod



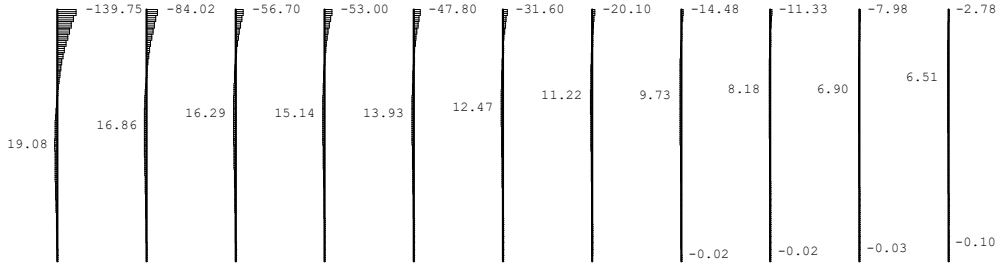
Ram: Ram 2
Uticaji u gredi: max T3= 234.72 / min T3= -259.23 kN

Opt. 11: komb temp 1



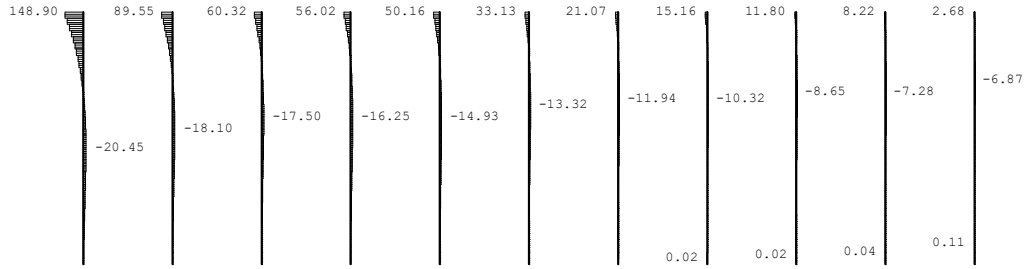
Ram: Ram 2
Uticaji u gredi: max T3= 182.48 / min T3= -134.76 kN

Opt. 12: komb temp 2



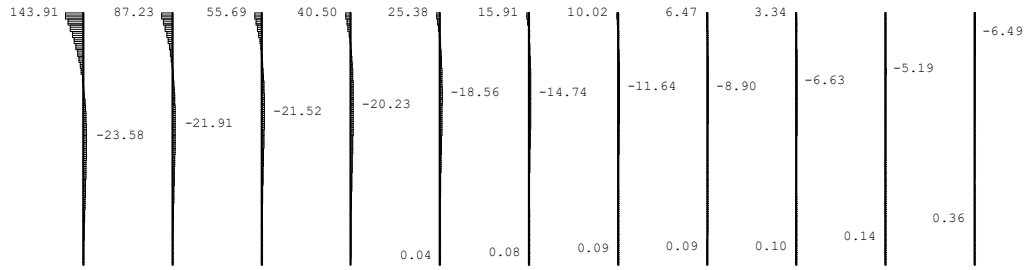
Ram: Ram 2
Uticaji u gredi: max T3= 185.20 / min T3= -139.75 kN

Opt. 13: komb temp 3



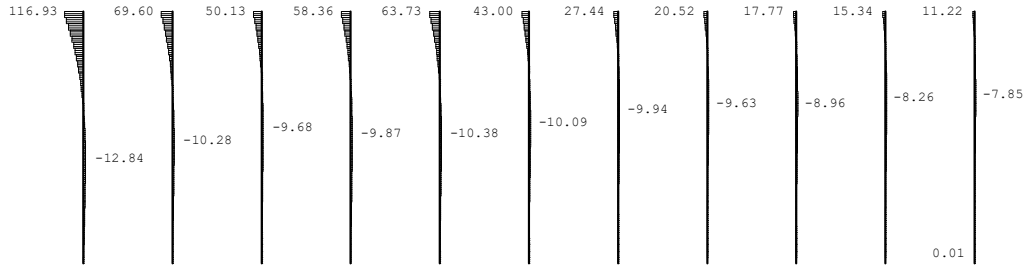
Ram: Ram 2
Uticaji u gredi: max T3= 148.90 / min T3= -197.45 kN

Opt. 14: komb temp 4



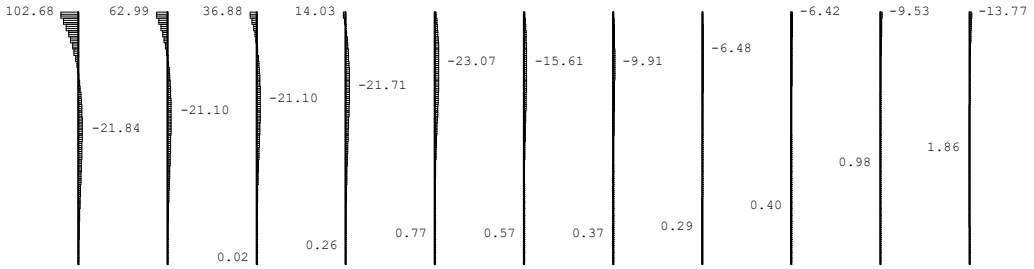
Ram: Ram 2
Uticaji u gredi: max T3= 143.91 / min T3= -194.74 kN

Opt. 15: komb temp 5



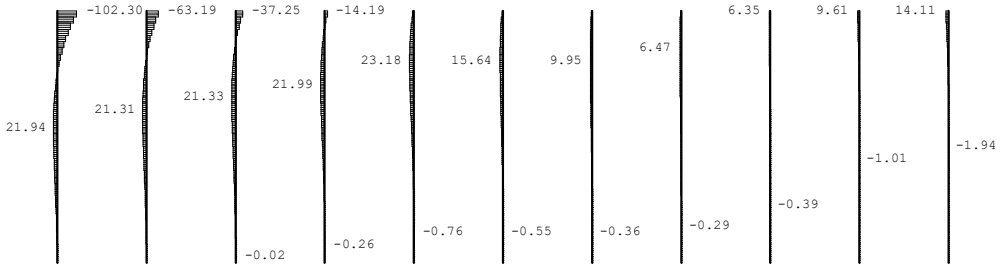
Ram: Ram 2
Uticaji u gredi: max T3= 131.55 / min T3= -150.95 kN

Opt. 16: komb temp 6



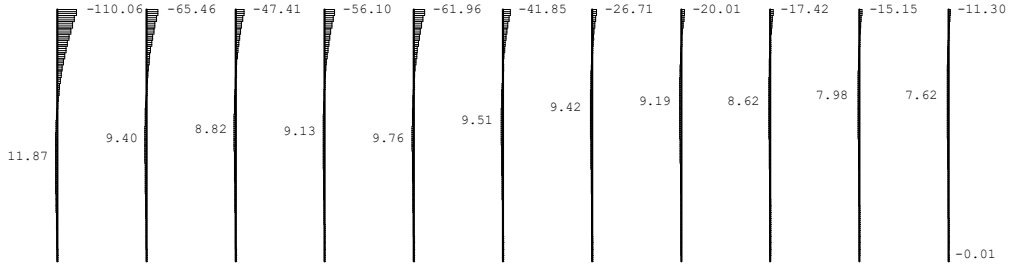
Ram: Ram 2
Uticaji u gredi: max T3= 102.68 / min T3= -143.19 kN

Opt. 17: komb temp 7



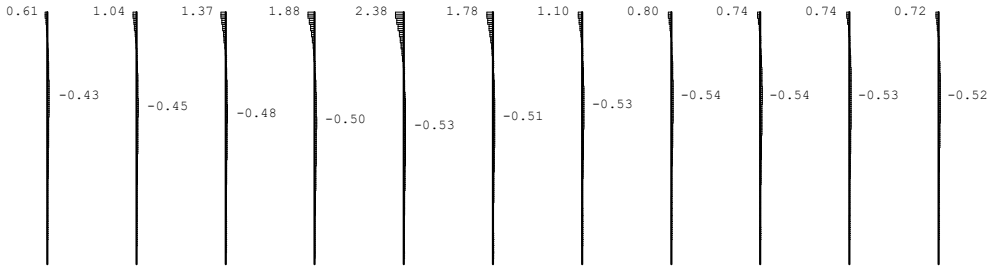
Ram: Ram 2
Uticaji u gredi: max T3= 131.51 / min T3= -102.30 kN

Opt. 18: komb temp 8



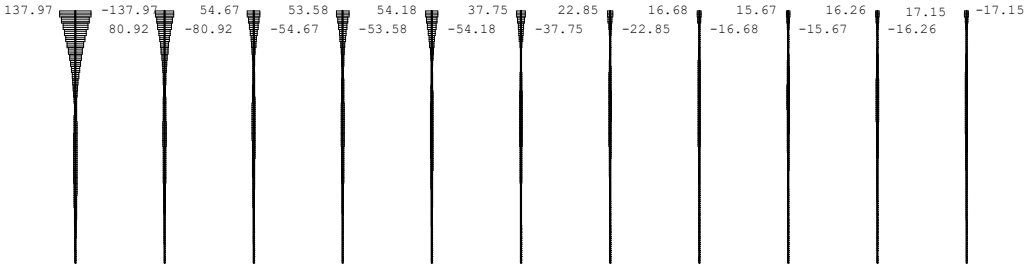
Ram: Ram 2
Uticaji u gredi: max T3= 141.76 / min T3= -128.75 kN

Opt. 19: BU



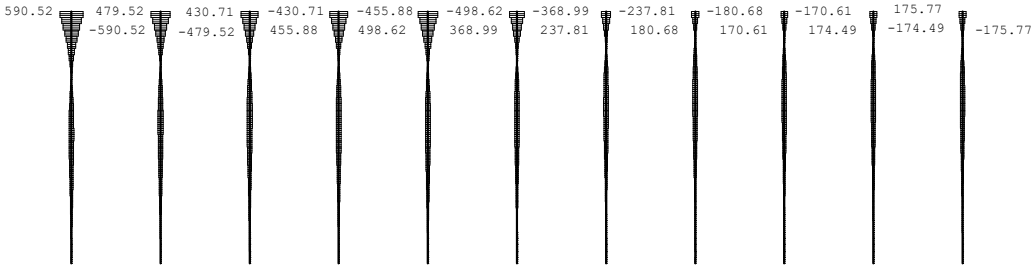
Ram: Ram 2
Uticaji u gredi: max T3= 7.02 / min T3= -2.94 kN

Opt. 20: Sx



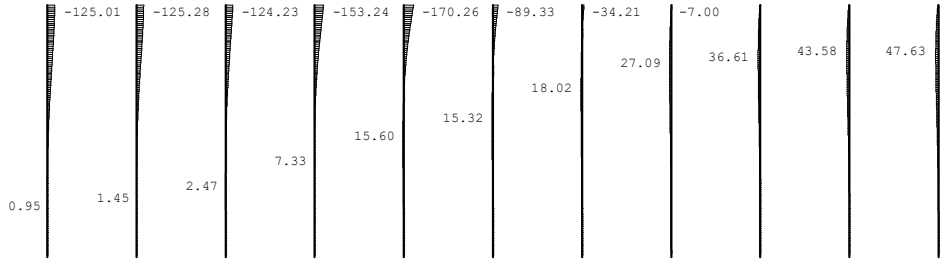
Ram: Ram 2
Uticaji u gredi: max T3= 214.15 / min T3= -214.15 kN

Opt. 21: Sy



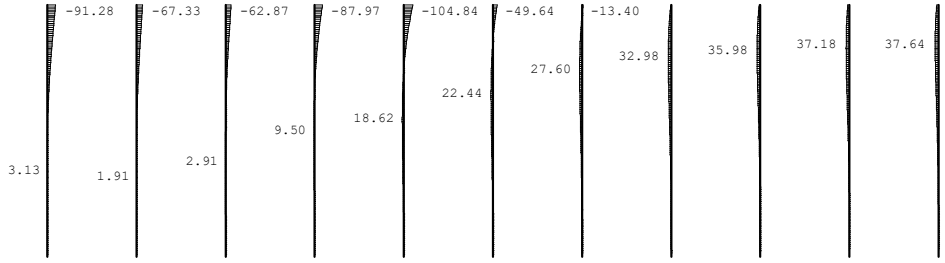
Ram: Ram 2
Uticaji u gredi: max T3= 1245.94 / min T3= -1245.94 kN

Opt. 1: sopstvena tezina (g)



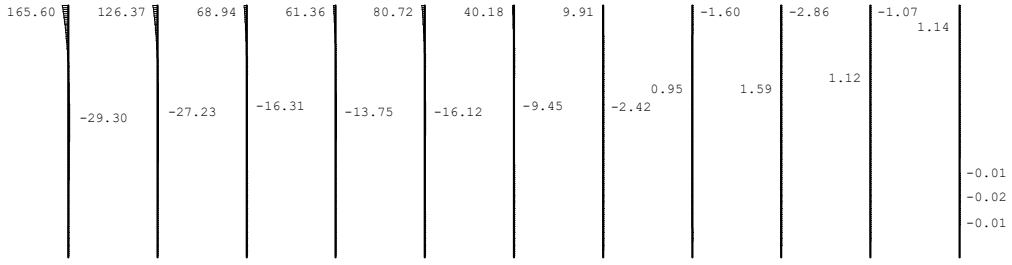
Ram: Ram 2
Uticaji u gredi: max M2= 75.36 / min M2= -423.31 kNm

Opt. 2: mrtav teret (Δg)



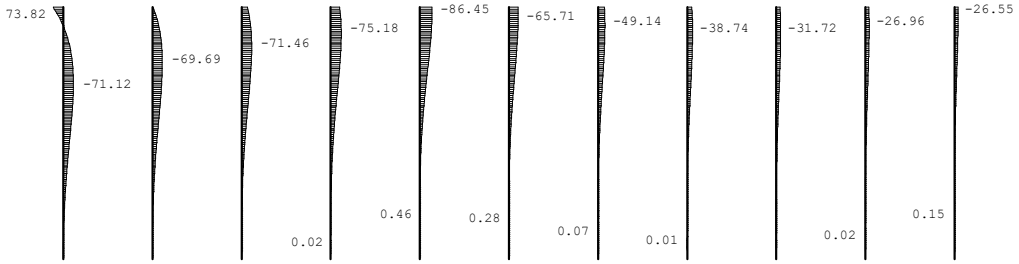
Ram: Ram 2
Uticaji u gredi: max M2= 100.20 / min M2= -277.76 kNm

Opt. 3: horizontalan pritisak tla



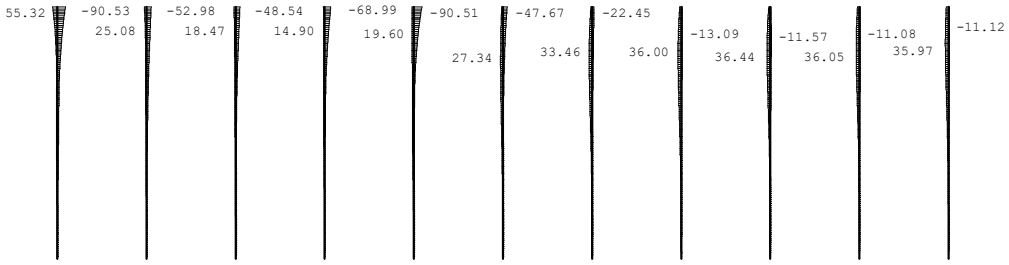
Ram: Ram 2
Uticaji u gredi: max M2= 667.95 / min M2= -149.38 kNm

Opt. 4: skupljanje



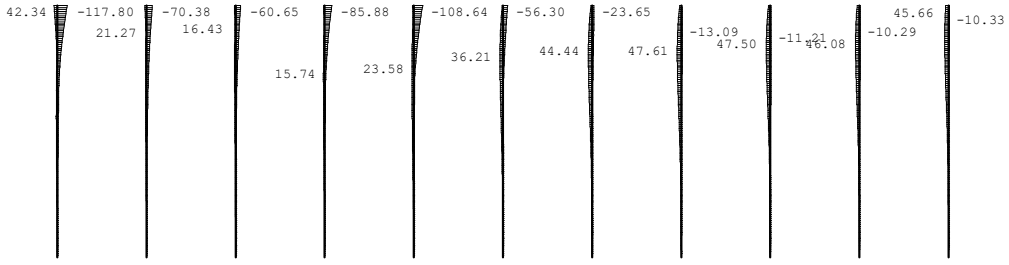
Ram: Ram 2
Uticaji u gredi: max M2= 91.79 / min M2= -174.51 kNm

Opt. 5: LM71



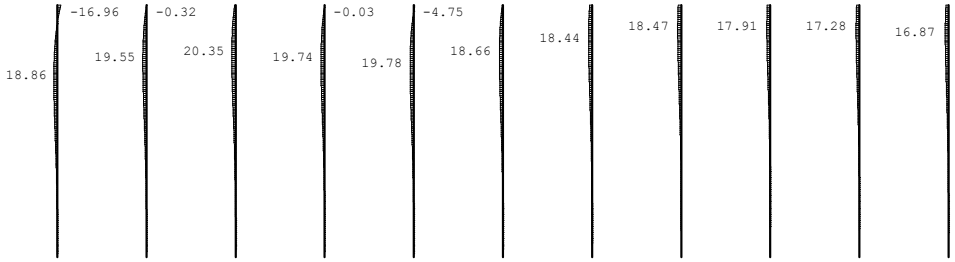
Ram: Ram 2
Uticaji u gredi: max M2= 125.67 / min M2= -276.93 kNm

Opt. 6: SW/2



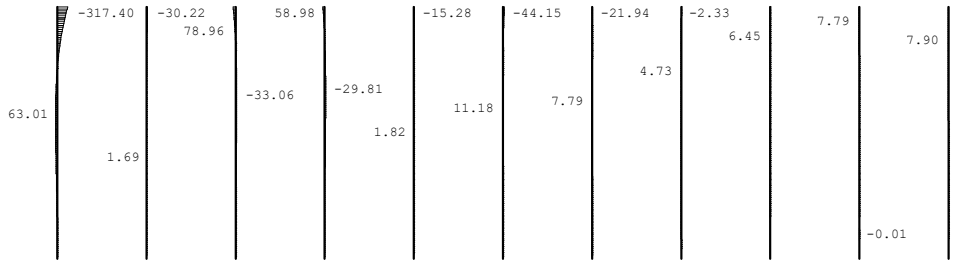
Ram: Ram 2
Uticaji u gredi: max M2= 152.89 / min M2= -293.46 kNm

Opt. 7: KP



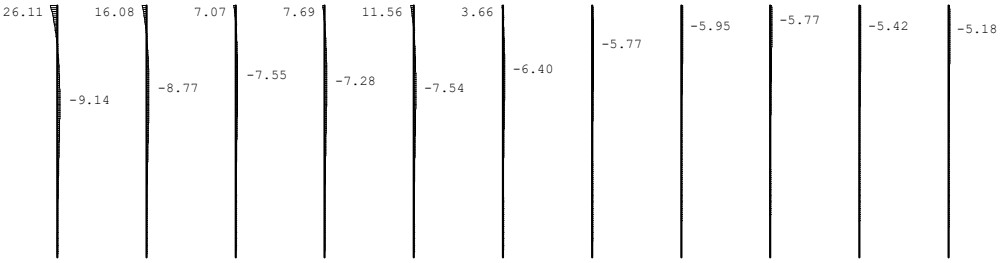
Ram: Ram 2
Uticaji u gredi: max M2= 30.35 / min M2= -127.35 kNm

Opt. 8: voz na nasipu ispred



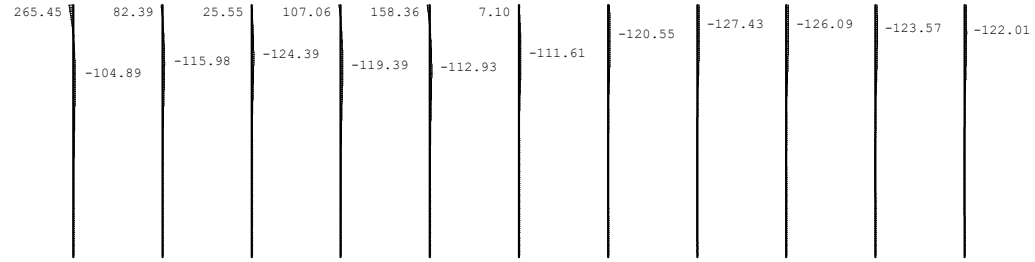
Ram: Ram 2
Uticaji u gredi: max M2= 580.03 / min M2= -752.98 kNm

Opt. 9: voz na nasipu iza



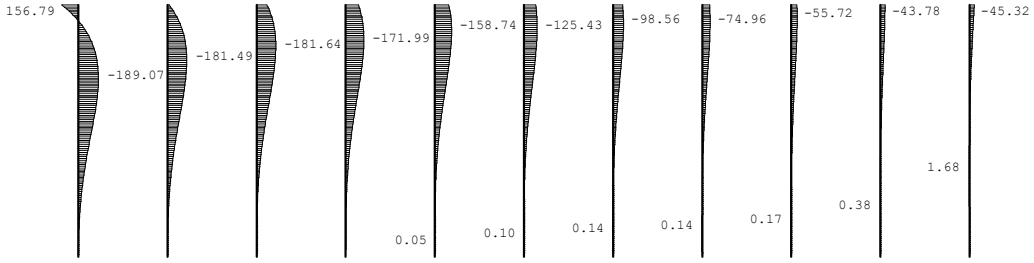
Ram: Ram 2
Uticaji u gredi: max M2= 91.87 / min M2= -28.16 kNm

Opt. 10: voz ispod



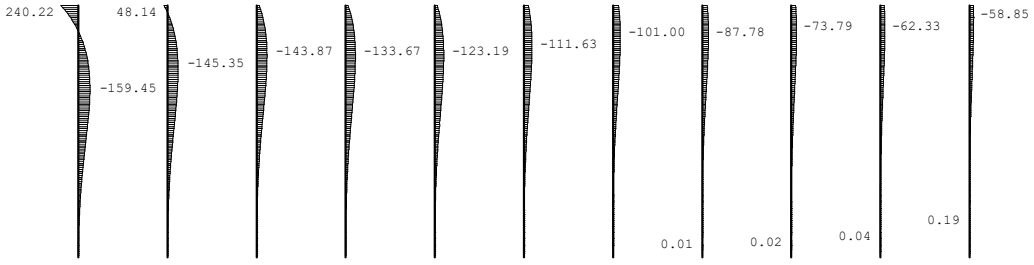
Ram: Ram 2
Uticaji u gredi: max M2= 1439.21 / min M2= -357.32 kNm

Opt. 11: komb temp 1



Ram: Ram 2
Uticaji u gredi: max M2= 205.60 / min M2= -231.28 kNm

Opt. 12: komb temp 2

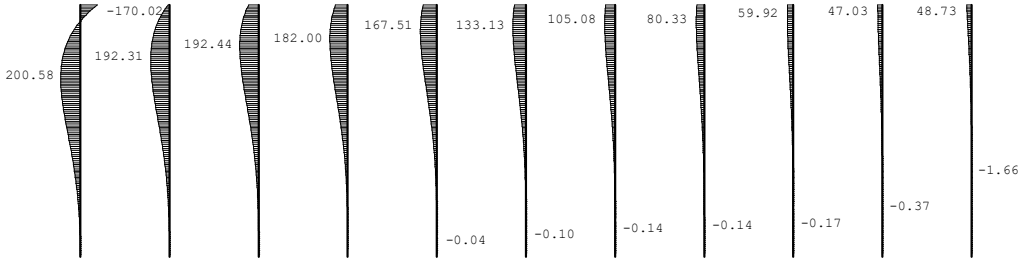


Ram: Ram 2
Uticaji u gredi: max M2= 338.92 / min M2= -285.09 kNm

Opt. 13: komb temp 3

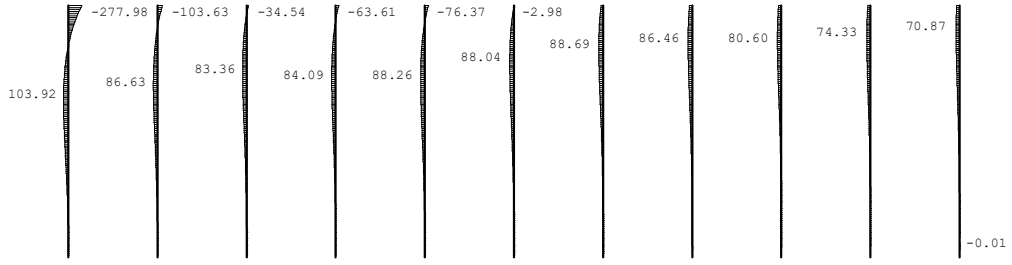
Ram: Ram 2
Uticaji u gredi: max M2= 302.30 / min M2= -353.82 kNm

Opt. 14: komb temp 4



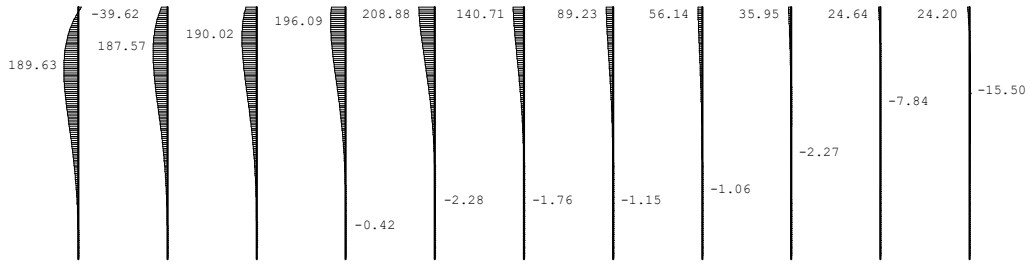
Ram: Ram 2
Uticaji u gredi: max M2= 248.49 / min M2= -223.30 kNm

Opt. 15: komb temp 5



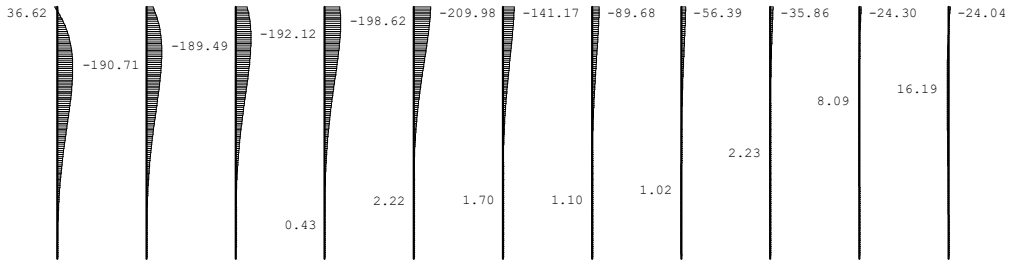
Ram: Ram 2
Uticaji u gredi: max M2= 303.18 / min M2= -508.70 kNm

Opt. 16: komb temp 6



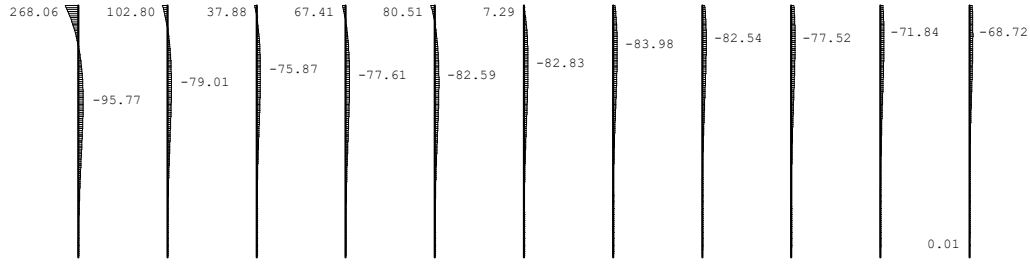
Ram: Ram 2
Uticaji u gredi: max M2= 317.05 / min M2= -124.87 kNm

Opt. 17: komb temp 7



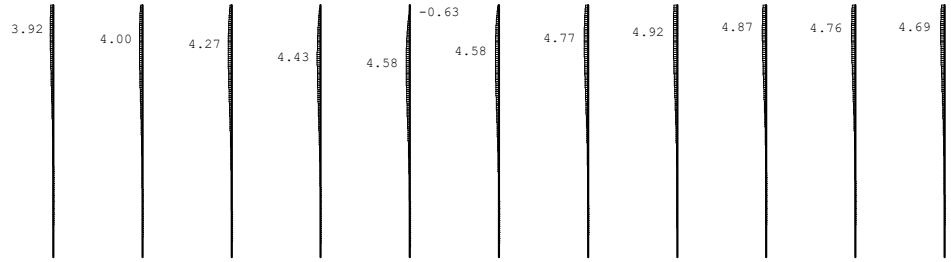
Ram: Ram 2
Uticaji u gredi: max M2= 113.10 / min M2= -305.01 kNm

Opt. 18: komb temp 8



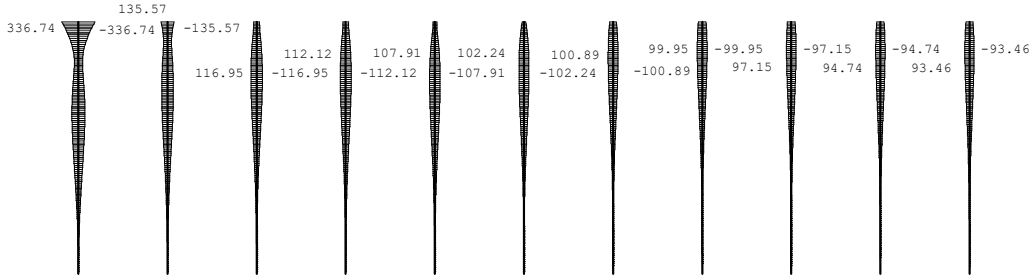
Ram: Ram 2
Uticaji u gredi: max M2= 497.53 / min M2= -291.55 kNm

Opt. 19: BU



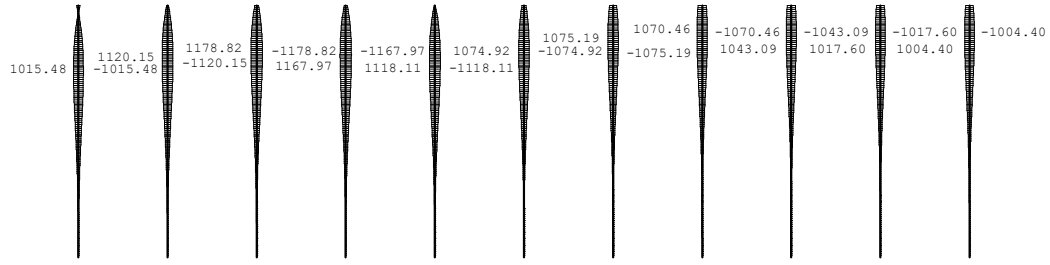
Ram: Ram 2
Uticaji u gredi: max M2= 5.24 / min M2= -30.82 kNm

Opt. 20: Sx



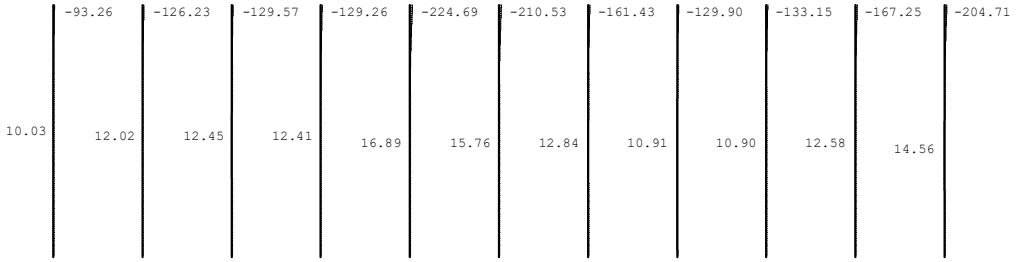
Ram: Ram 2
Uticaji u gredi: max M2= 499.20 / min M2= -499.20 kNm

Opt. 21: Sy



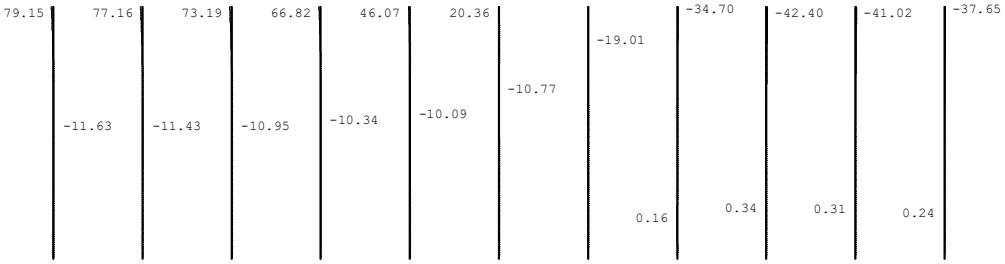
Ram: Ram 2
Uticaji u gredi: max M2= 5033.09 / min M2= -5033.09 kNm

Opt. 1: sopstvena tezina (g)



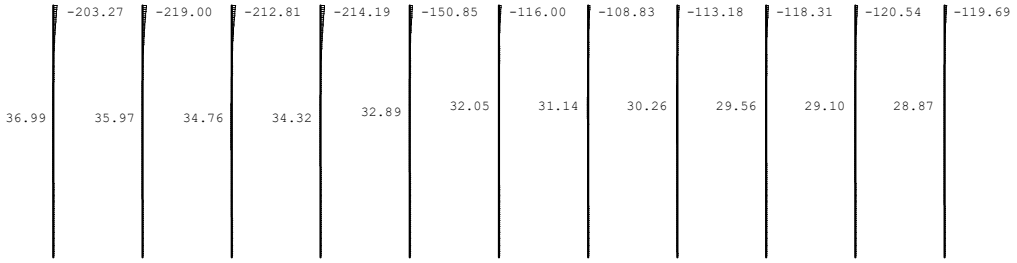
Ram: Ram 2
Uticaji u gredi: max M3= 2072.64 / min M3= -1564.84 kNm

Opt. 2: mrtav teret (Δg)



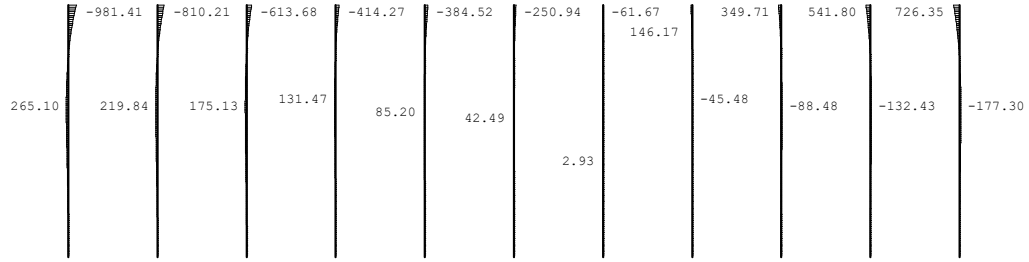
Ram: Ram 2
Uticaji u gredi: max M3= 880.28 / min M3= -145.33 kNm

Opt. 3: horizontalan pritisak tla



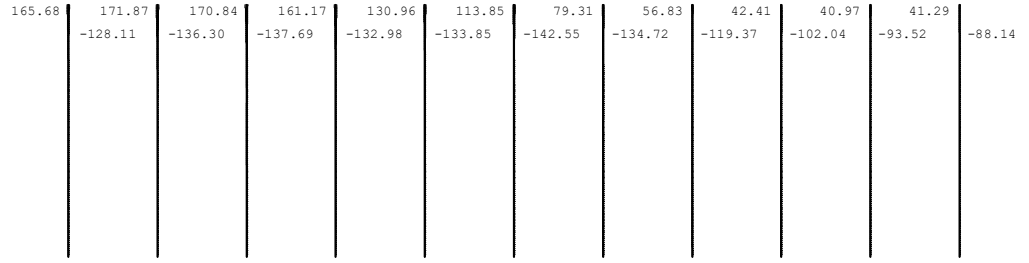
Ram: Ram 2
Uticaji u gredi: max M3= 371.90 / min M3= -1357.12 kNm

Opt. 4: skupljanje



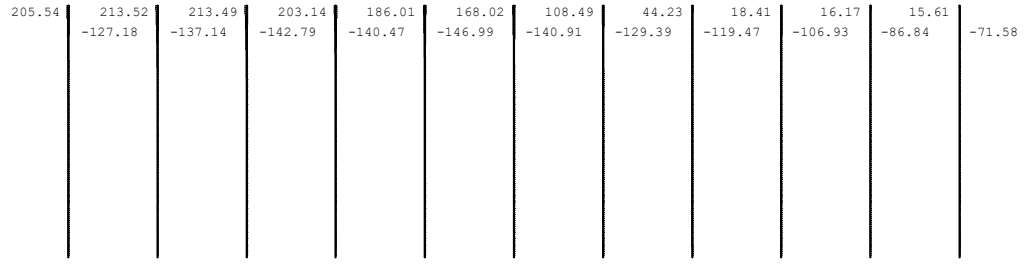
Ram: Ram 2
Uticaji u gredi: max M3= 3000.59 / min M3= -981.41 kNm

Opt. 5: LM71



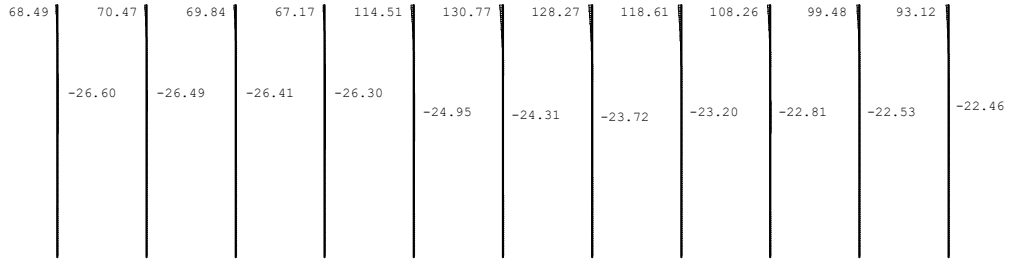
Ram: Ram 2
Uticaji u gredi: max M3= 2801.31 / min M3= -1508.24 kNm

Opt. 6: SW/2



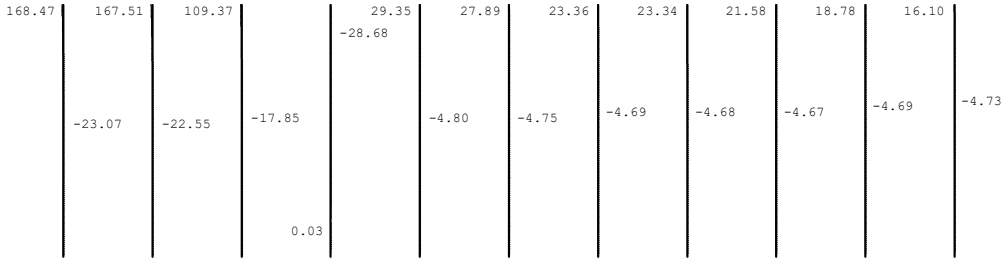
Ram: Ram 2
Uticaji u gredi: max M3= 3116.48 / min M3= -1493.47 kNm

Opt. 7: KP



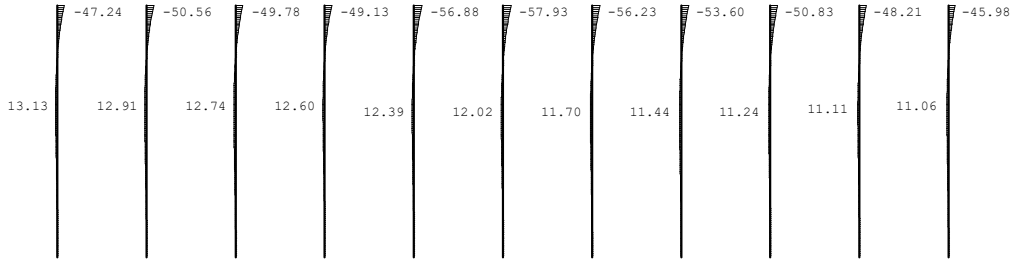
Ram: Ram 2
Uticaji u gredi: max M3= 307.41 / min M3= -959.62 kNm

Opt. 8: voz na nasipu ispred



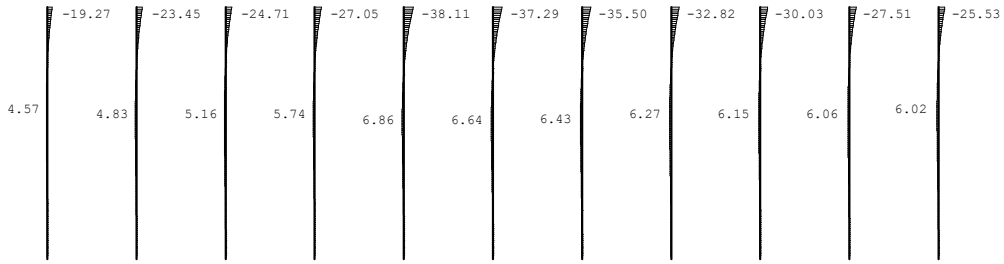
Ram: Ram 2
Uticaji u gredi: max M3= 648.17 / min M3= -2681.02 kNm

Opt. 9: voz na nasipu iza



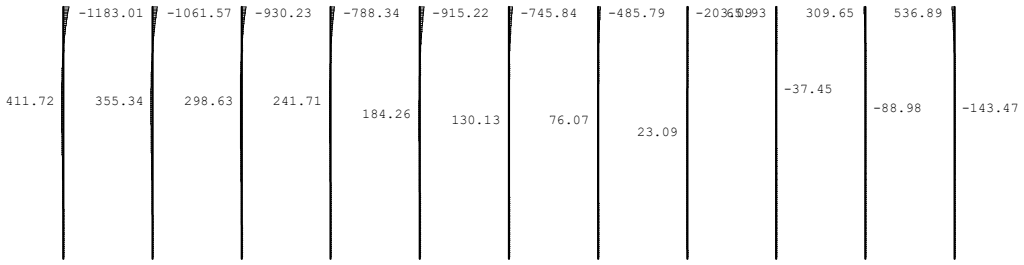
Ram: Ram 2
Uticaji u gredi: max M3= 171.31 / min M3= -80.85 kNm

Opt. 10: voz ispod



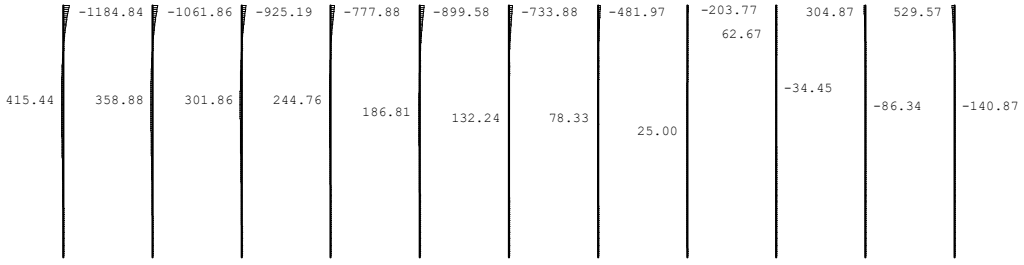
Ram: Ram 2
Uticaji u gredi: max M3= 98.18 / min M3= -77.88 kNm

Opt. 11: komb temp 1



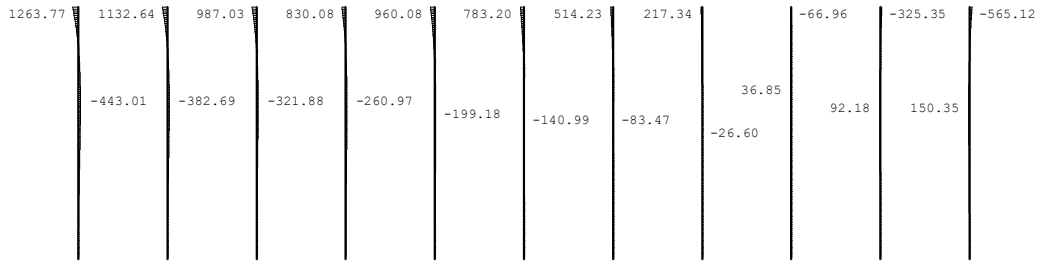
Ram: Ram 2
Uticaji u gredi: max M3= 5303.29 / min M3= -1219.01 kNm

Opt. 12: komb temp 2



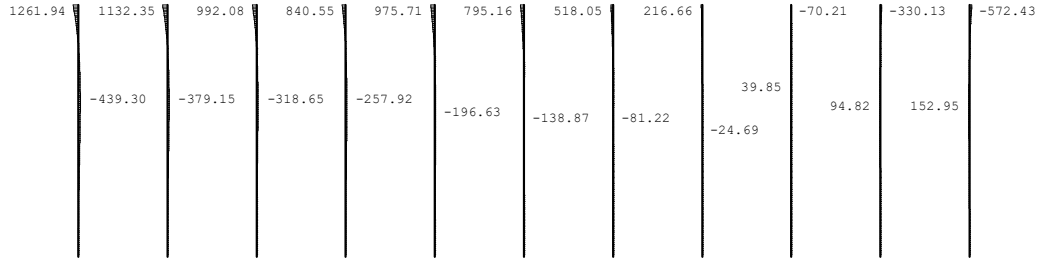
Ram: Ram 2
Uticaji u gredi: max M3= 4974.36 / min M3= -1184.84 kNm

Opt. 13: komb temp 3



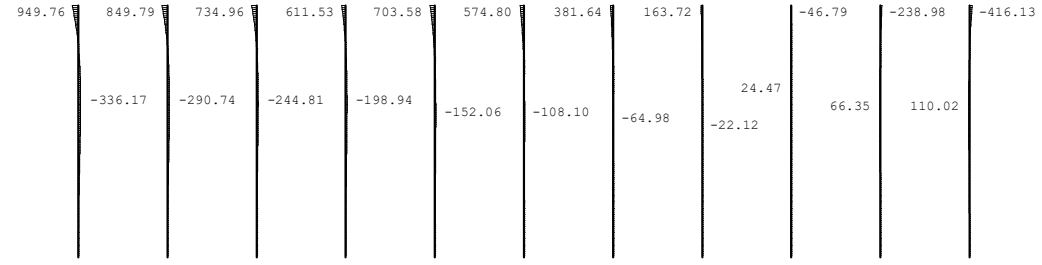
Ram: Ram 2
Uticaji u gredi: max M3= 1263.77 / min M3= -5316.95 kNm

Opt. 14: komb temp 4



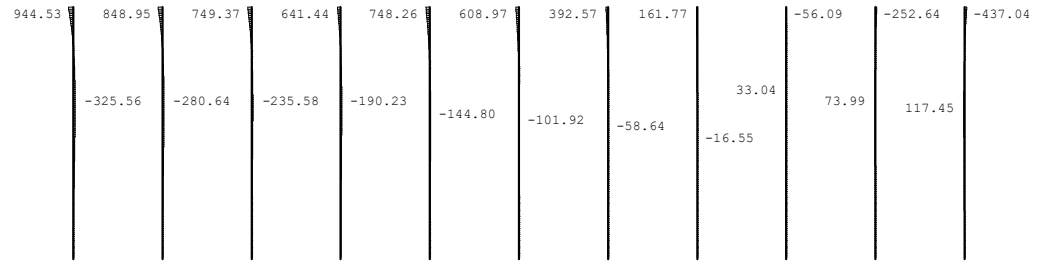
Ram: Ram 2
Uticaji u gredi: max M3= 1296.31 / min M3= -5645.88 kNm

Opt. 15: komb temp 5



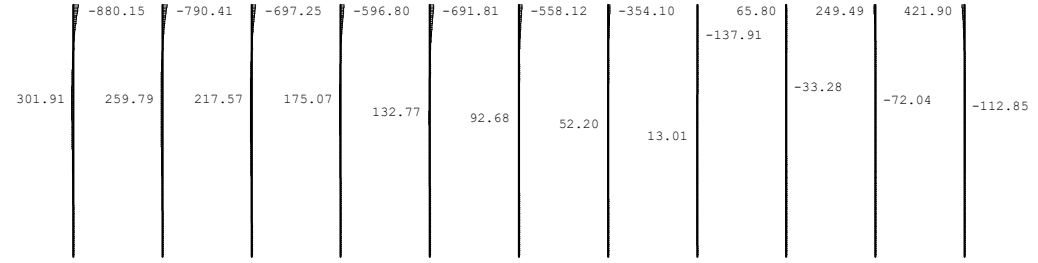
Ram: Ram 2
Uticaji u gredi: max M3= 1746.75 / min M3= -3641.16 kNm

Opt. 16: komb temp 6



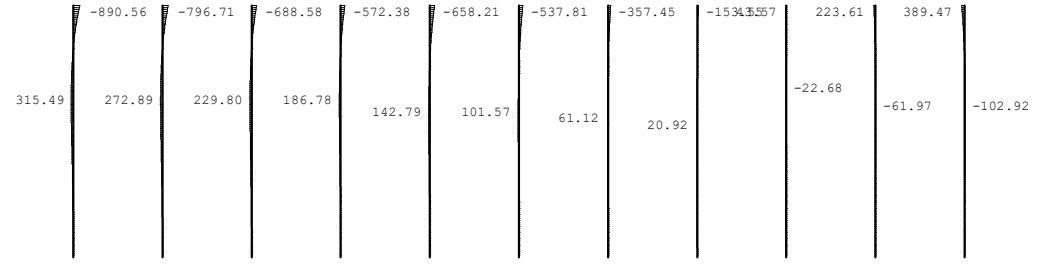
Ram: Ram 2
Uticaji u gredi: max M3= 1097.69 / min M3= -4580.97 kNm

Opt. 17: komb temp 7



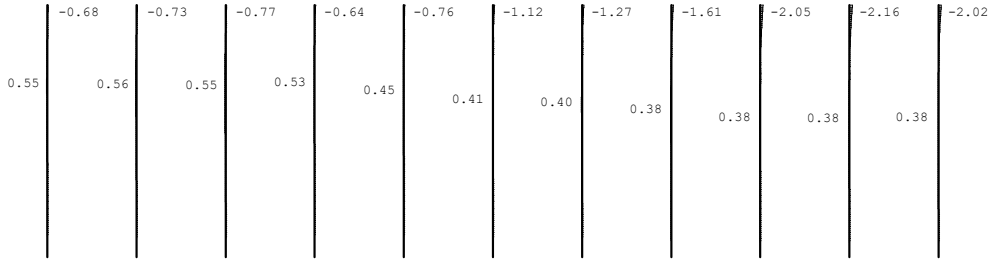
Ram: Ram 2
Uticaji u gredi: max M3= 4195.22 / min M3= -1031.75 kNm

Opt. 18: komb temp 8



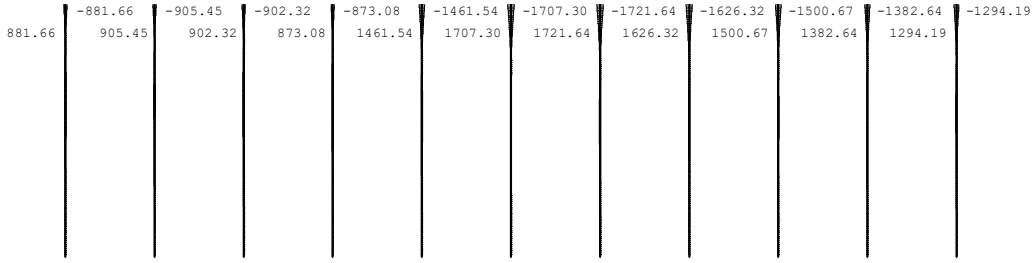
Ram: Ram 2
Uticaji u gredi: max M3= 3384.22 / min M3= -1735.51 kNm

Opt. 19: BU



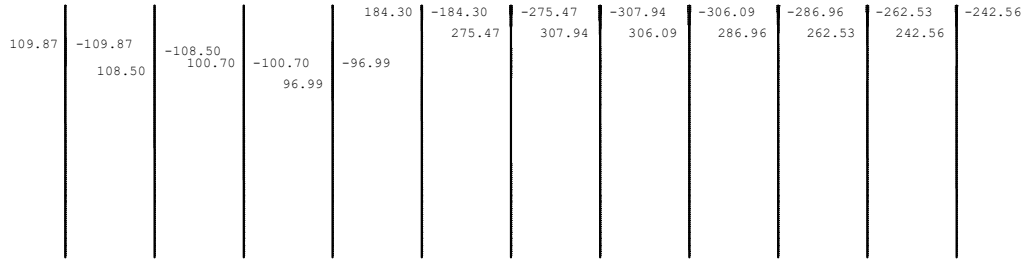
Ram: Ram 2
Uticaji u gredi: max M3= 17.66 / min M3= -5.90 kNm

Opt. 20: Sx

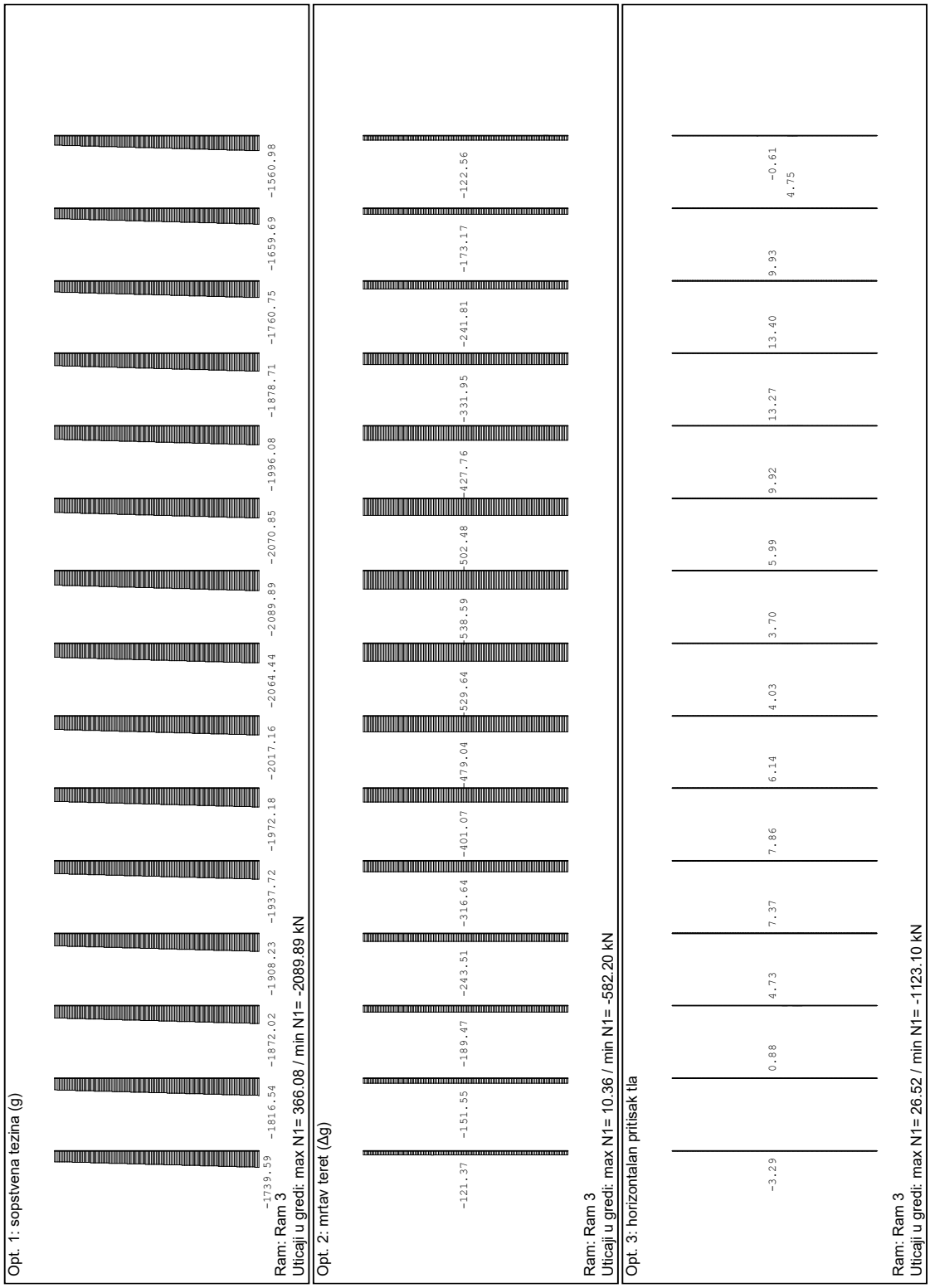


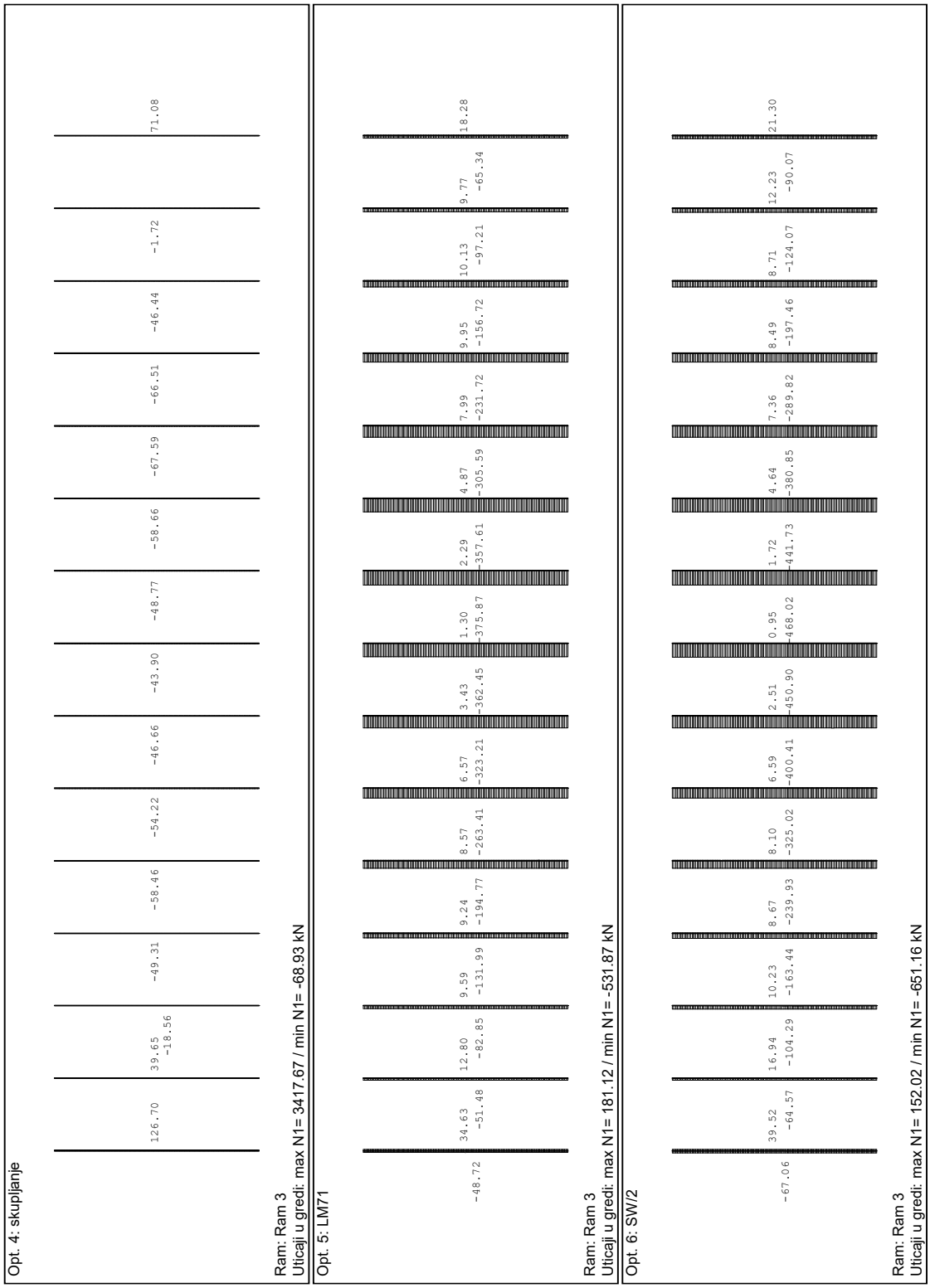
Ram: Ram 2
Uticaji u gredi: max M3= 12700.90 / min M3= -12700.90 kNm

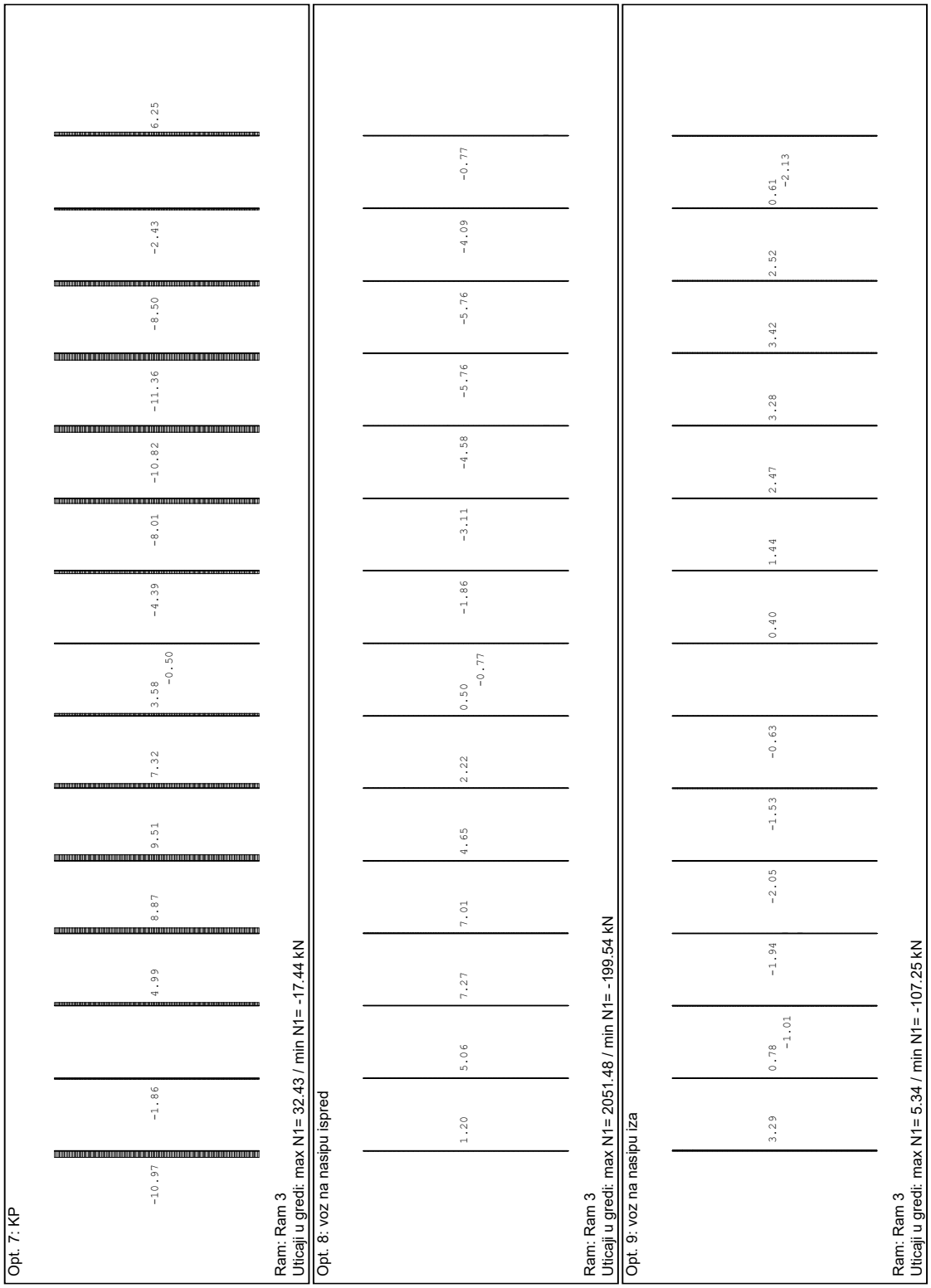
Opt. 21: Sy

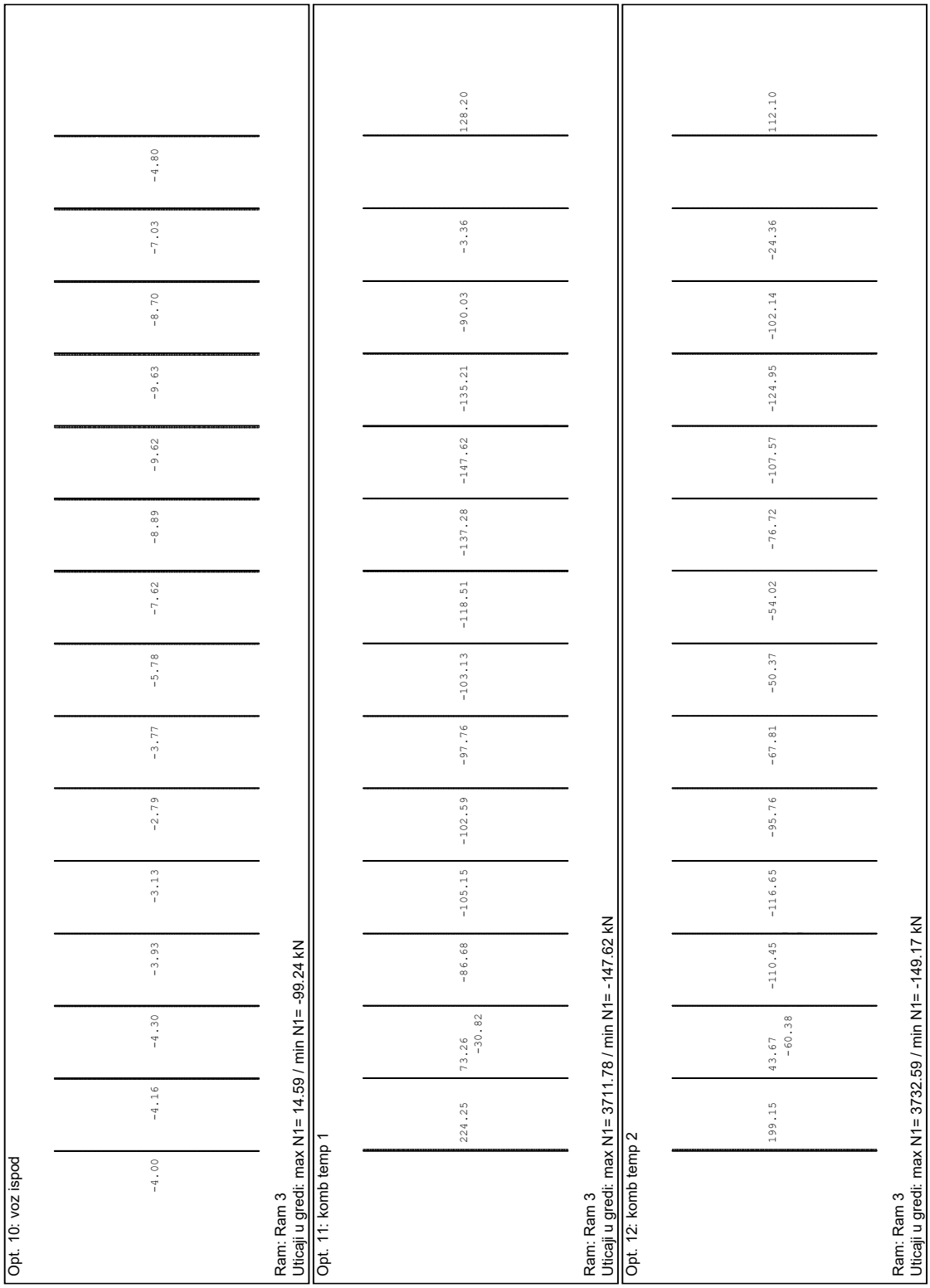


Ram: Ram 2
Uticaji u gredi: max M3= 4776.97 / min M3= -4776.97 kNm


Opt. 1: sopstvena tezina (g)
-1739.59
-1816.54
-1872.02
-1908.23
-1937.72
-1972.18
-2017.16
-2064.44
-2089.89
-2070.85
-1996.08
-1878.71
-1760.75
-1659.69
-1560.98
Ram: Ram 3
Uticaji u gredi: max N1= 366.08 / min N1= -2089.89 kN
Opt. 2: mrtav teret (Δg)
-121.37
-151.55
-189.47
-243.51
-316.64
-401.07
-479.04
-529.64
-538.59
-502.48
-427.76
-331.95
-241.81
-173.17
-122.56
Ram: Ram 3
Uticaji u gredi: max N1= 10.36 / min N1= -582.20 kN
Opt. 3: horizontalan pritisak tla
-3.29
0.88
4.73
7.37
7.86
6.14
4.03
3.70
5.99
9.92
13.27
13.40
9.93
4.75
-0.61
Ram: Ram 3
Uticaji u gredi: max N1= 26.52 / min N1= -1123.10 kN

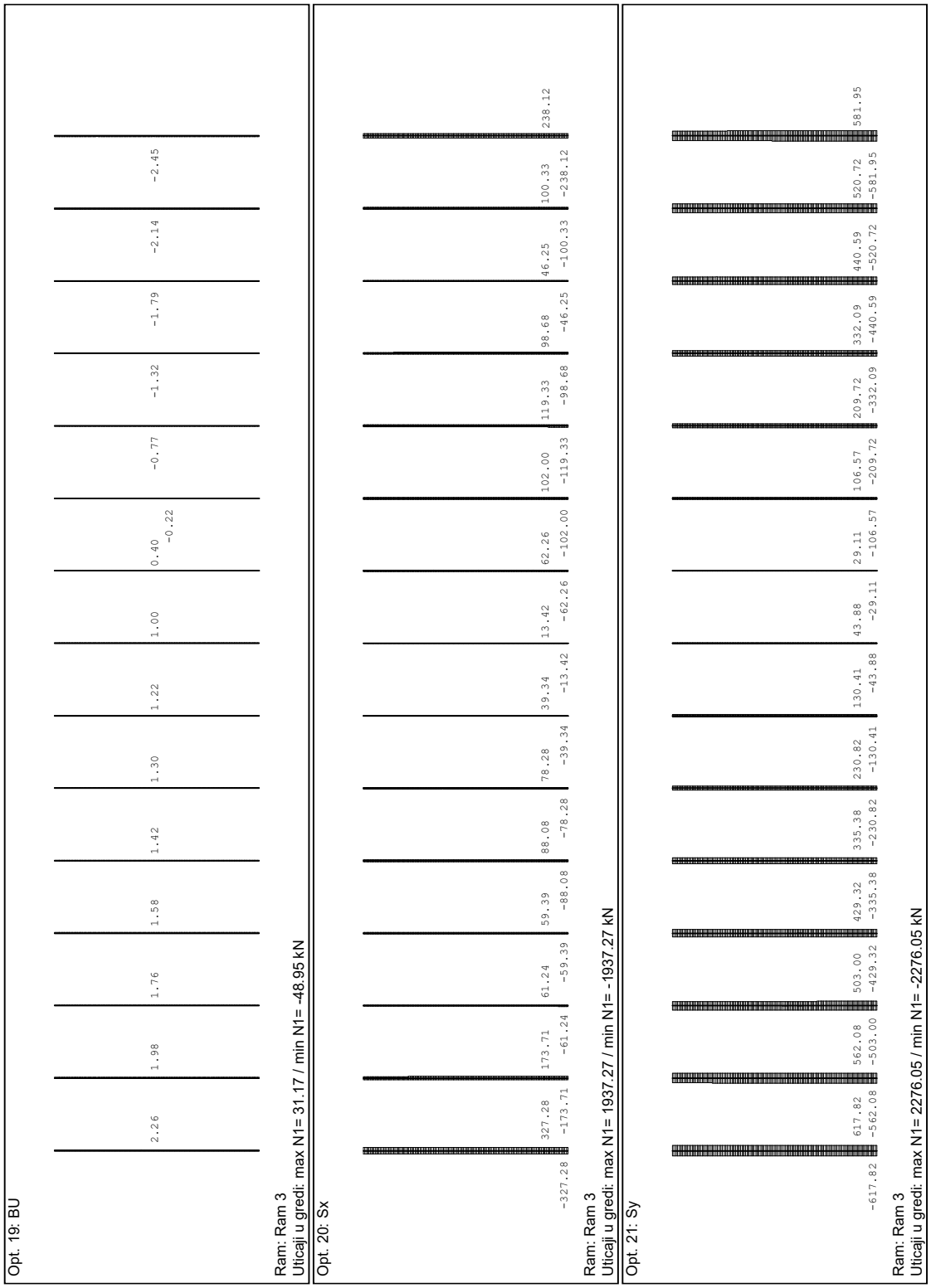

Opt. 4: skupljanje
126.70
39.65
-18.56
-49.31
-58.46
-54.22
-46.66
-43.90
-48.77
-58.66
-67.59
-66.51
-46.44
-1.72
71.08
Ram: Ram 3
Uticaji u gredi: max N1= 3417.67 / min N1= -68.93 kN
Opt. 5: LM71
-48.72
34.63
-51.48
12.80
-82.85
9.59
-131.99
9.24
-194.77
8.57
-263.41
6.57
-323.21
3.43
-362.45
1.30
-375.87
2.29
-357.61
4.87
-305.59
7.99
-231.72
9.95
-156.72
10.13
-97.21
9.77
-65.34
18.28
Ram: Ram 3
Uticaji u gredi: max N1= 181.12 / min N1= -531.87 kN
Opt. 6: SW/2
-67.06
39.52
-64.57
16.94
-104.29
10.23
-163.44
8.67
-239.93
8.10
-325.02
6.59
-400.41
2.51
-450.90
0.95
-468.02
1.72
-441.73
4.64
-380.85
7.36
-289.82
8.49
-197.46
8.71
-124.07
12.23
-90.07
21.30
Ram: Ram 3
Uticaji u gredi: max N1= 152.02 / min N1= -651.16 kN

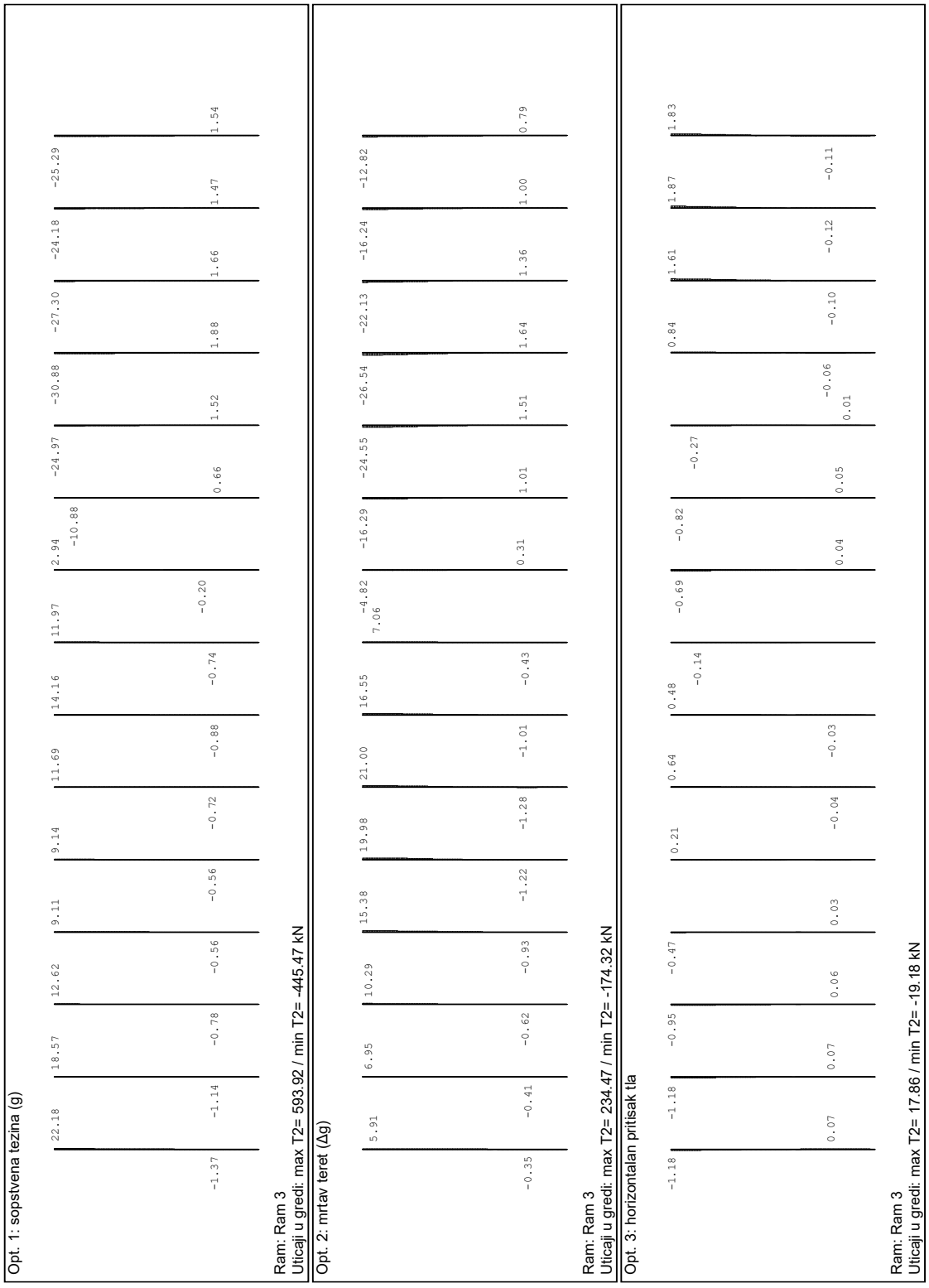

Opt. 7: KP
-10.97
-1.86
4.99
8.87
9.51
7.32
3.58
-0.50
-4.39
-8.01
-10.82
-11.36
-8.50
-2.43
6.25
Ram: Ram 3
Uticaji u gredi: max N1= 32.43 / min N1= -17.44 kN
Opt. 8: voz na nasipu ispred
1.20
5.06
7.27
7.01
4.65
2.22
0.50
-0.77
-1.86
-3.11
-4.58
-5.76
-5.76
-4.09
-0.77
Ram: Ram 3
Uticaji u gredi: max N1= 2051.48 / min N1= -199.54 kN
Opt. 9: voz na nasipu iza
3.29
0.78
-1.01
-1.94
-2.05
-1.53
-0.63
0.40
1.44
2.47
3.28
3.42
2.52
0.61
-2.13
Ram: Ram 3
Uticaji u gredi: max N1= 5.34 / min N1= -107.25 kN

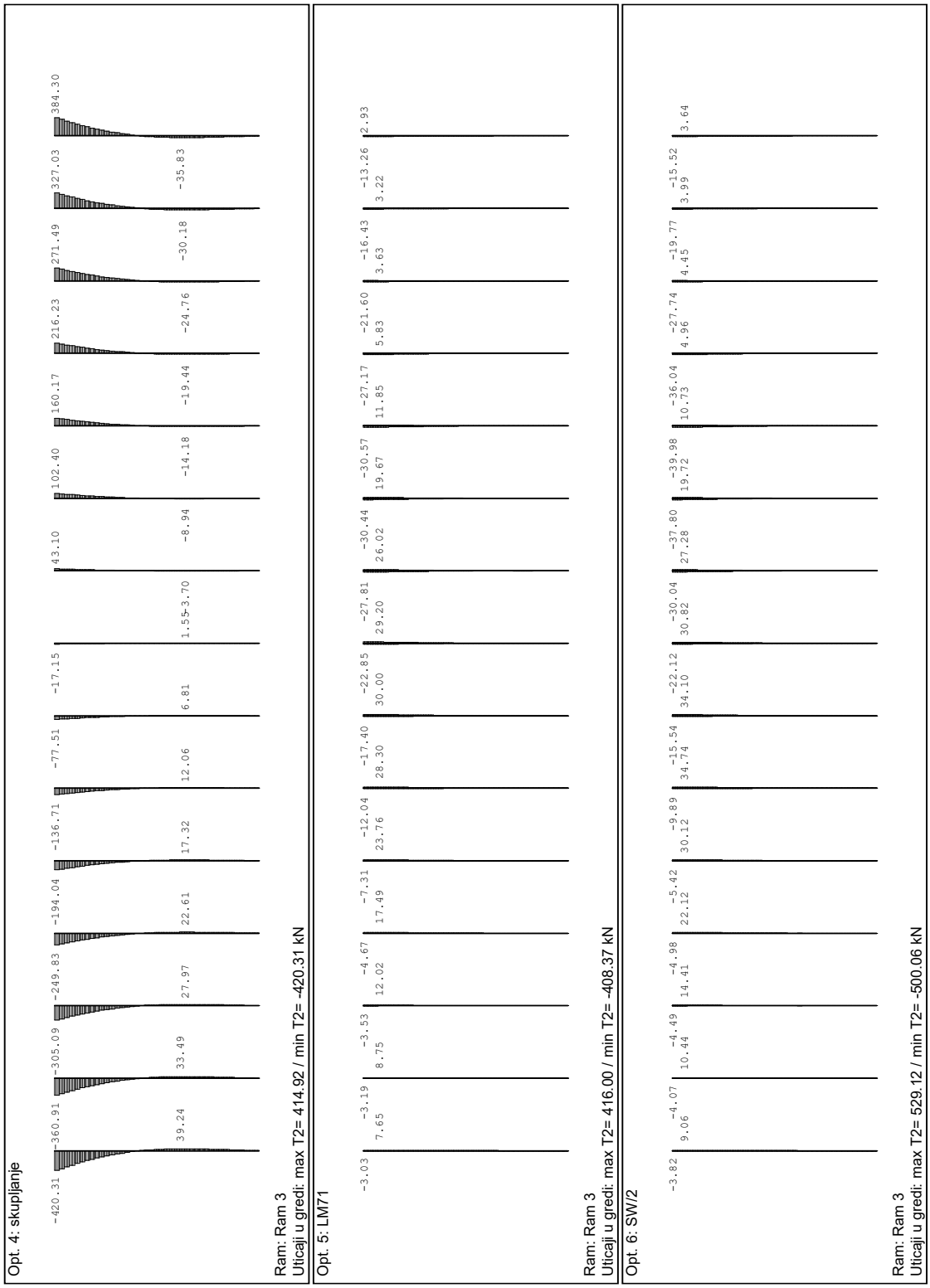

Opt. 10: voz ispod
-4.00
-4.16
-4.30
-3.93
-3.13
-2.79
-3.77
-5.78
-7.62
-8.89
-9.62
-9.63
-8.70
-7.03
-4.80
Ram: Ram 3
Uticaji u gredi: max N1= 14.59 / min N1= -99.24 kN
Opt. 11: komb temp 1
224.25
73.26
-30.82
-86.68
-105.15
-102.59
-97.76
-103.13
-118.51
-137.28
-147.62
-135.21
-90.03
-3.36
128.20
Ram: Ram 3
Uticaji u gredi: max N1= 3711.78 / min N1= -147.62 kN
Opt. 12: komb temp 2
199.15
43.67
-60.38
-110.45
-116.65
-95.76
-67.81
-50.37
-54.02
-76.72
-107.57
-124.95
-102.14
-24.36
112.10
Ram: Ram 3
Uticaji u gredi: max N1= 3732.59 / min N1= -149.17 kN

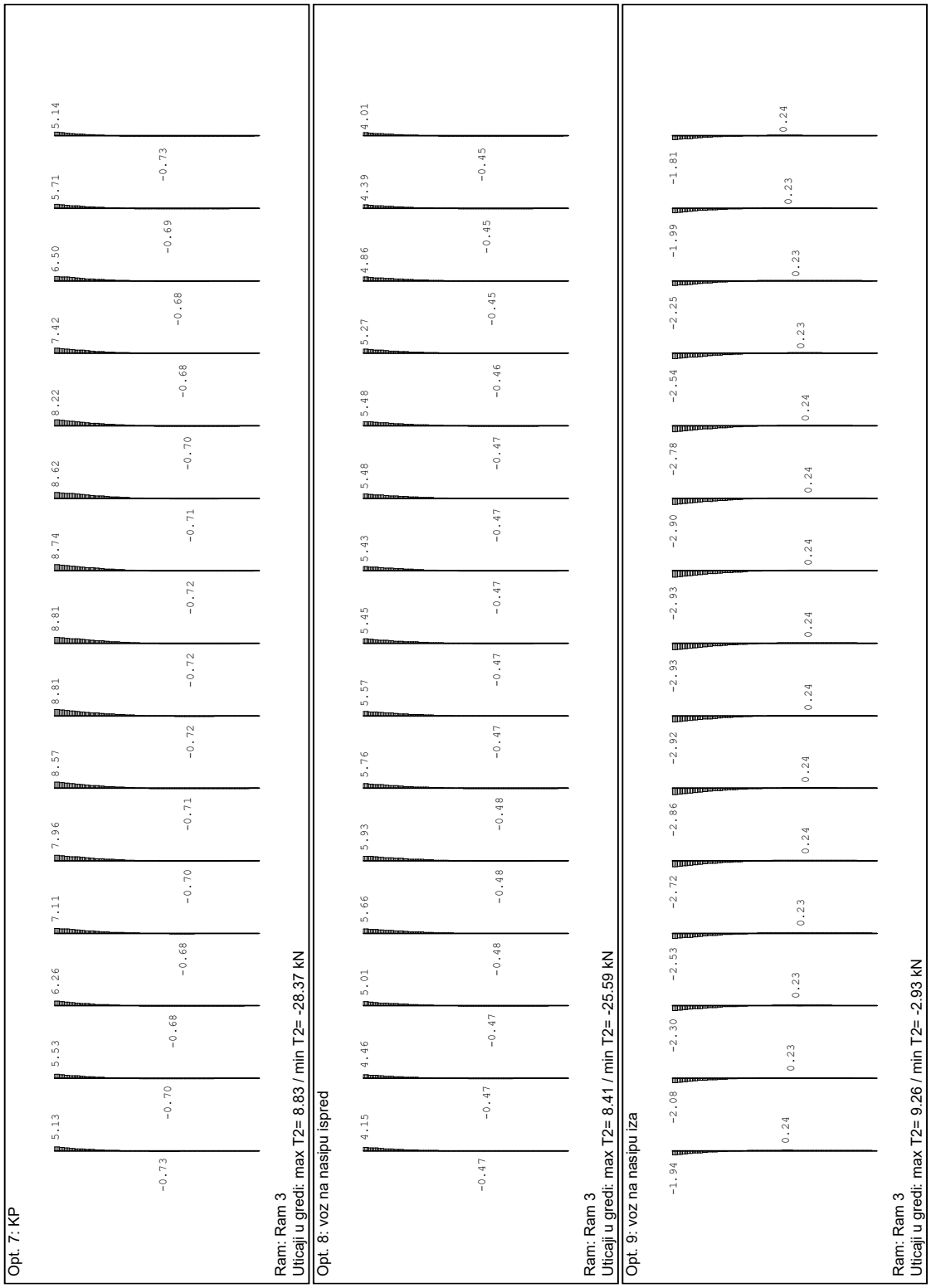
Opt. 13: komb temp 3
-213.27
-47.57
63.42
117.02
124.05
102.37
73.33
55.49
59.77
83.85
116.07
133.62
108.55
25.28
-120.11
Ram: Ram 3
Uticaji u gredi: max N1= 157.81 / min N1= -3980.74 kN
Opt. 14: komb temp 4
-238.37
-77.16
33.86
93.25
112.55
109.20
103.28
108.25
124.27
144.41
156.12
143.89
96.44
4.28
-136.21
Ram: Ram 3
Uticaji u gredi: max N1= 156.12 / min N1= -3959.92 kN
Opt. 15: komb temp 5
-133.51
-4.50
78.71
112.80
105.16
69.58
23.44
-13.97
-23.12
-0.92
44.86
89.40
94.17
41.09
-73.11
Ram: Ram 3
Uticaji u gredi: max N1= 159.73 / min N1= -3007.48 kN

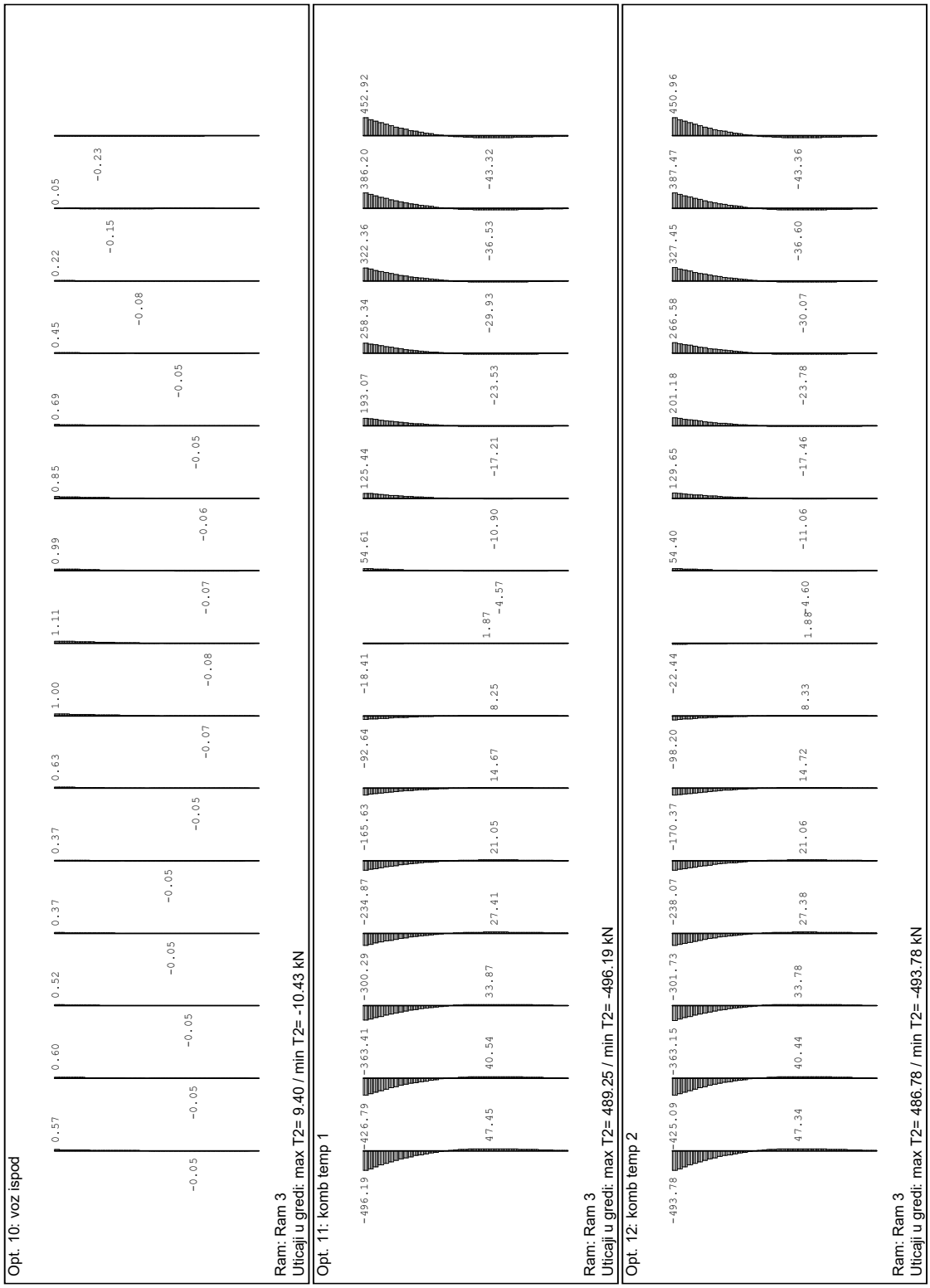
Opt. 16: komb temp 6
-205.22
-89.04
-5.75
44.90
72.29
89.10
109.02
136.78
161.15
172.11
159.29
118.73
59.57
-18.92
-119.13
Ram: Ram 3
Uticaji u gredi: max N1= 214.70 / min N1= -2948.01 kN
Opt. 17: komb temp 7
188.25
80.84
3.74
-3.31
-69.16
-85.62
-105.15
-131.29
-152.13
-158.14
-141.28
-102.50
-53.74
8.46
90.17
Ram: Ram 3
Uticaji u gredi: max N1= 2764.07 / min N1= -195.84 kN
Opt. 18: komb temp 8
122.92
1.57
-76.43
-107.87
-99.61
-64.62
-19.30
17.81
27.43
6.27
-38.48
-82.89
-89.37
-40.40
67.10
Ram: Ram 3
Uticaji u gredi: max N1= 2821.37 / min N1= -153.25 kN

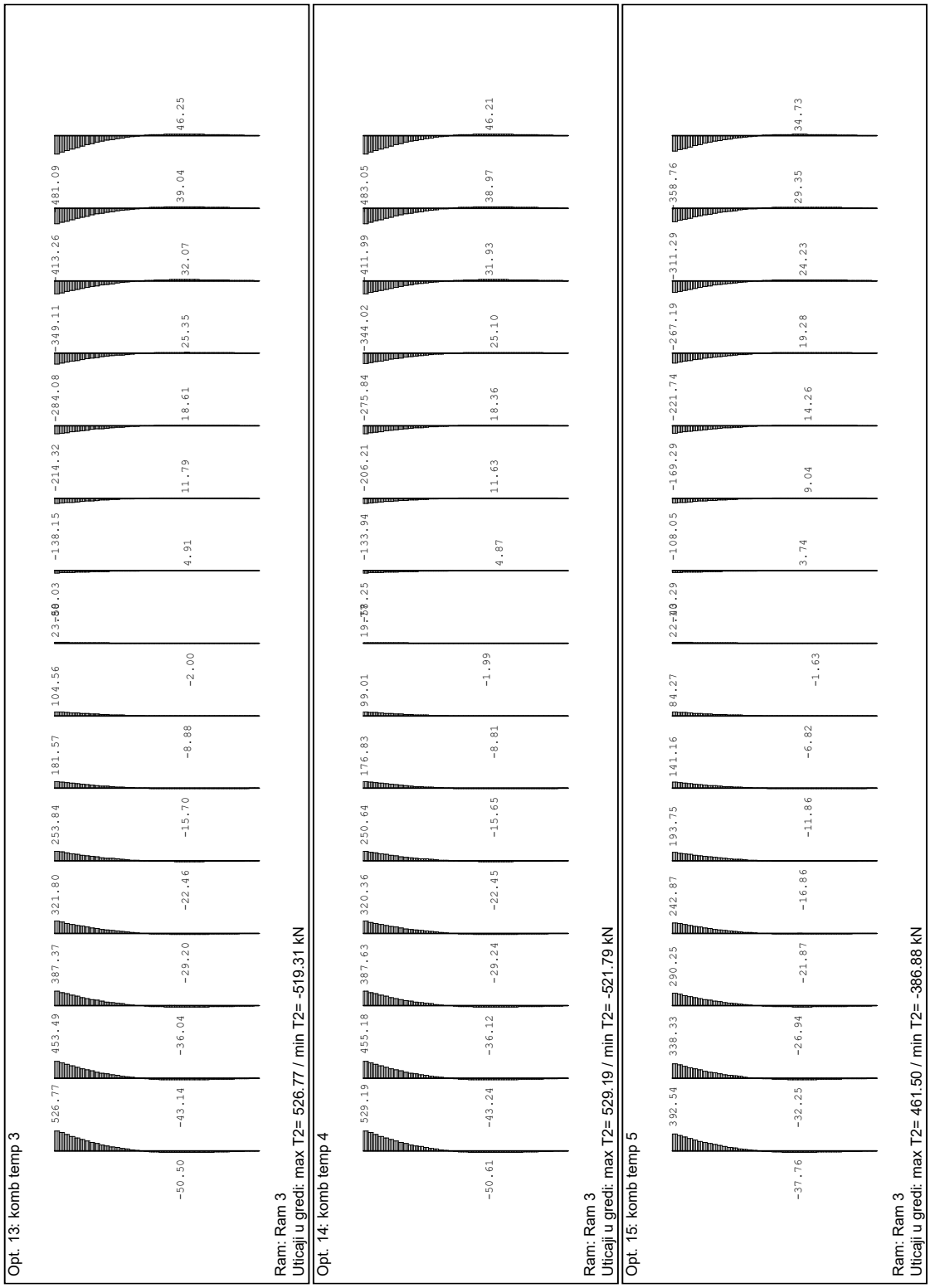

Opt. 19: BU
2.26
1.98
1.76
1.58
1.42
1.30
1.22
1.00
0.40
-0.22
-0.77
-1.32
-1.79
-2.14
-2.45
Ram: Ram 3
Uticaji u gredi: max N1= 31.17 / min N1= -48.95 kN
Opt. 20: Sx
-327.28
327.28
-173.71
173.71
-61.24
61.24
-59.39
59.39
-88.08
88.08
-78.28
78.28
-39.34
39.34
-13.42
13.42
-62.26
62.26
-102.00
102.00
-119.33
119.33
-98.68
98.68
-46.25
46.25
-100.33
100.33
-238.12
238.12
Ram: Ram 3
Uticaji u gredi: max N1= 1937.27 / min N1= -1937.27 kN
Opt. 21: Sy
-617.82
617.82
-562.08
562.08
-503.00
503.00
-429.32
429.32
-335.38
335.38
-230.82
230.82
-130.41
130.41
-43.88
43.88
-29.11
29.11
-106.57
106.57
-209.72
209.72
-332.09
332.09
-440.59
440.59
-520.72
520.72
-581.95
581.95
Ram: Ram 3
Uticaji u gredi: max N1= 2276.05 / min N1= -2276.05 kN

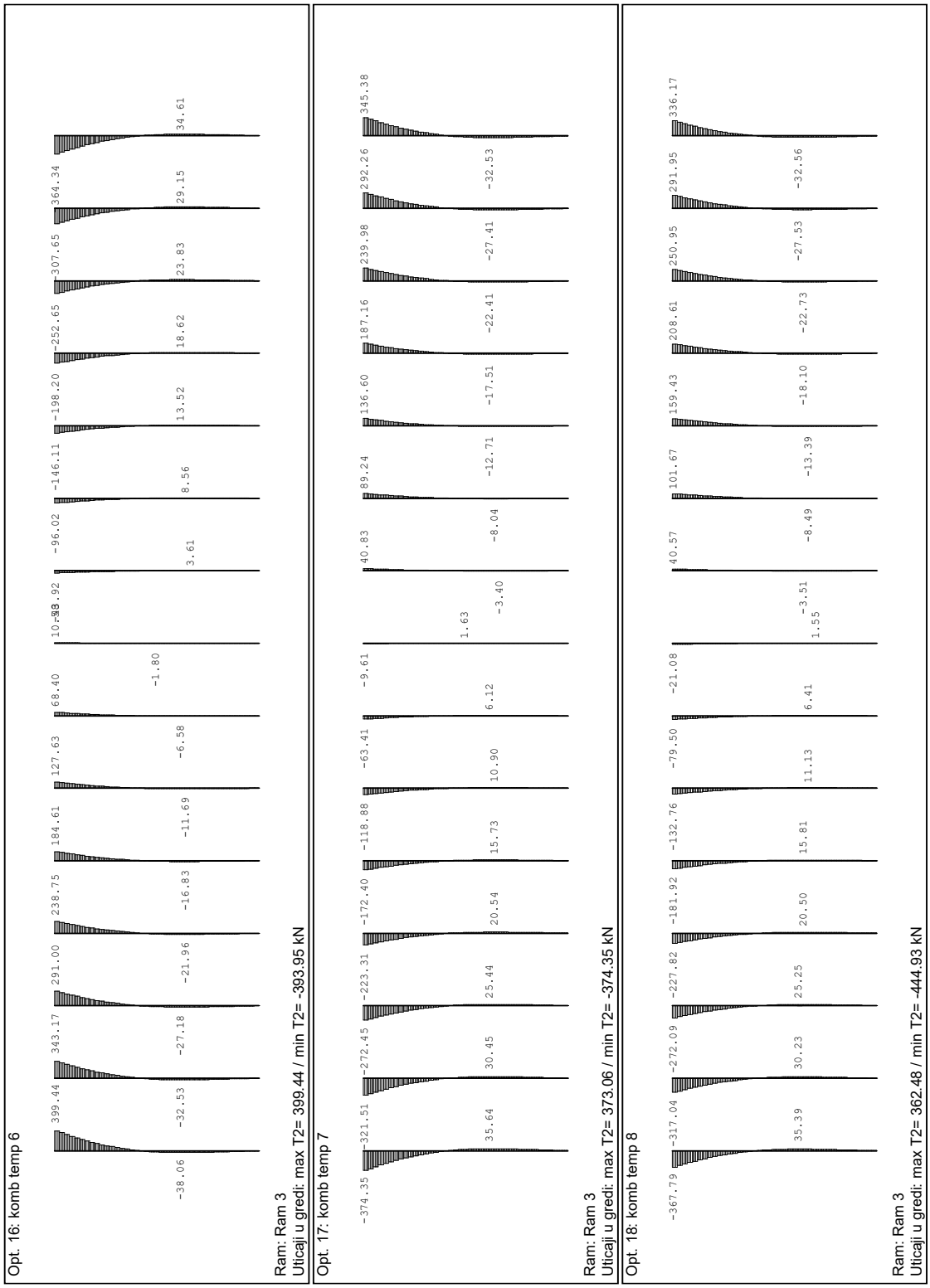

Opt. 1: sopstvena tezina (g)
Ram: Ram 3
Uticaji u gredi: max T2= 593.92 / min T2= -445.47 kN
Opt. 2: mrtav teret (Δg)
Ram: Ram 3
Uticaji u gredi: max T2= 234.47 / min T2= -174.32 kN
Opt. 3: horizontalan pritisak tla
Ram: Ram 3
Uticaji u gredi: max T2= 17.86 / min T2= -19.18 kN

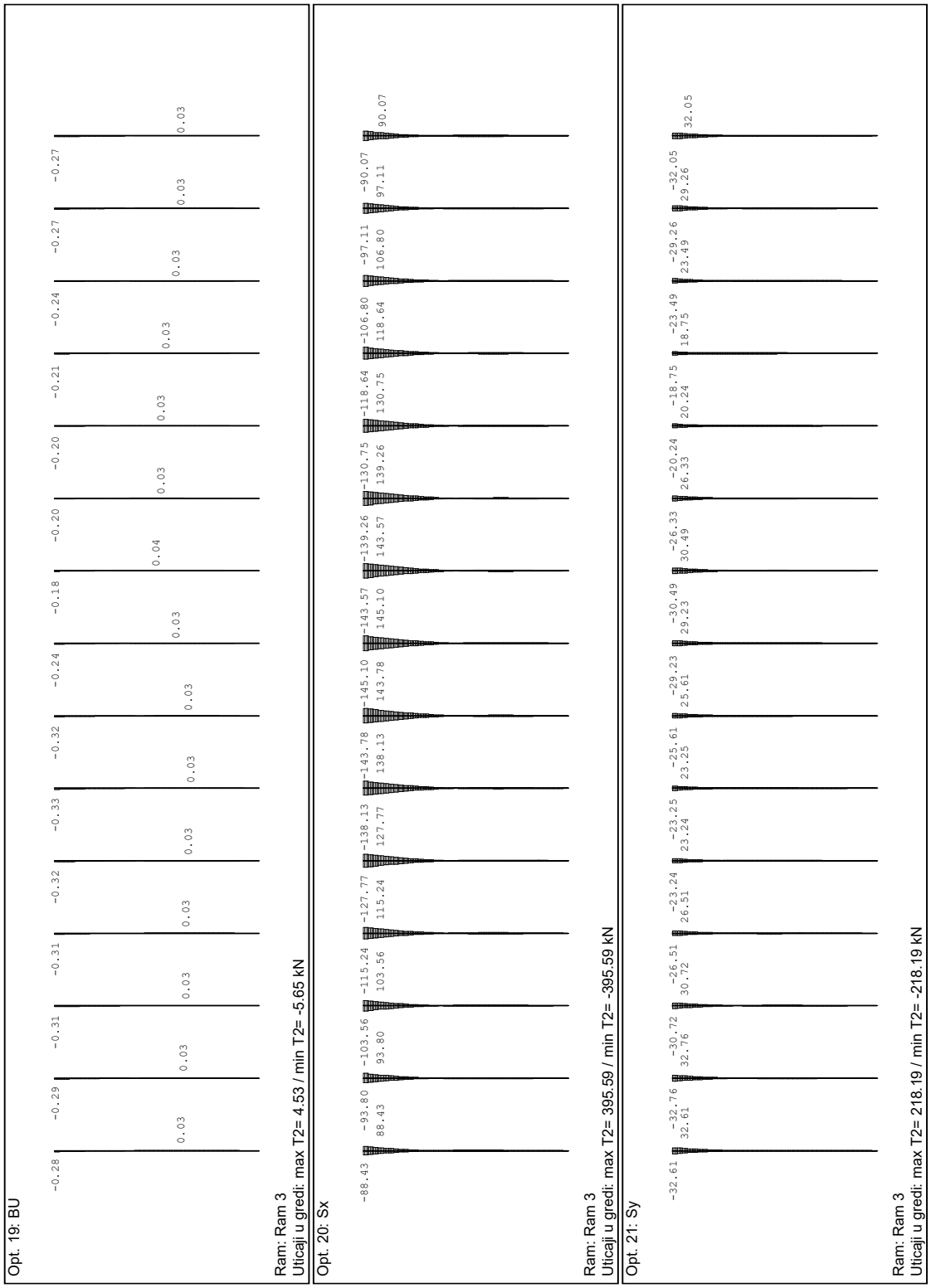

Opt. 4: skupljanje
-420.31
-360.91
-305.09
-249.83
-194.04
-136.71
-77.51
-17.15
43.10
102.40
160.17
216.23
271.49
327.03
384.30
39.24
33.49
27.97
22.61
17.32
12.06
6.81
1.55
-3.70
-8.94
-14.18
-19.44
-24.76
-30.18
-35.83
Ram: Ram 3
Uticaji u gredi: max T2= 414.92 / min T2= -420.31 kN
Opt. 5: LM71
-3.03
-3.19
-3.53
-4.67
-7.31
-12.04
-17.40
-22.85
-27.81
-30.44
-30.57
-27.17
-21.60
-16.43
-13.26
2.93
7.65
8.75
12.02
17.49
23.76
28.30
30.00
29.20
26.02
19.67
11.85
5.83
3.63
3.22
Ram: Ram 3
Uticaji u gredi: max T2= 416.00 / min T2= -408.37 kN
Opt. 6: SW/2
-3.82
-4.07
-4.49
-4.98
-5.42
-9.89
-15.54
-22.12
-30.04
-37.80
-39.98
-36.04
-27.74
-19.77
-15.52
3.64
9.06
10.44
14.41
22.12
30.12
34.74
34.10
30.82
27.28
19.72
10.73
4.96
4.45
3.99
Ram: Ram 3
Uticaji u gredi: max T2= 529.12 / min T2= -500.06 kN

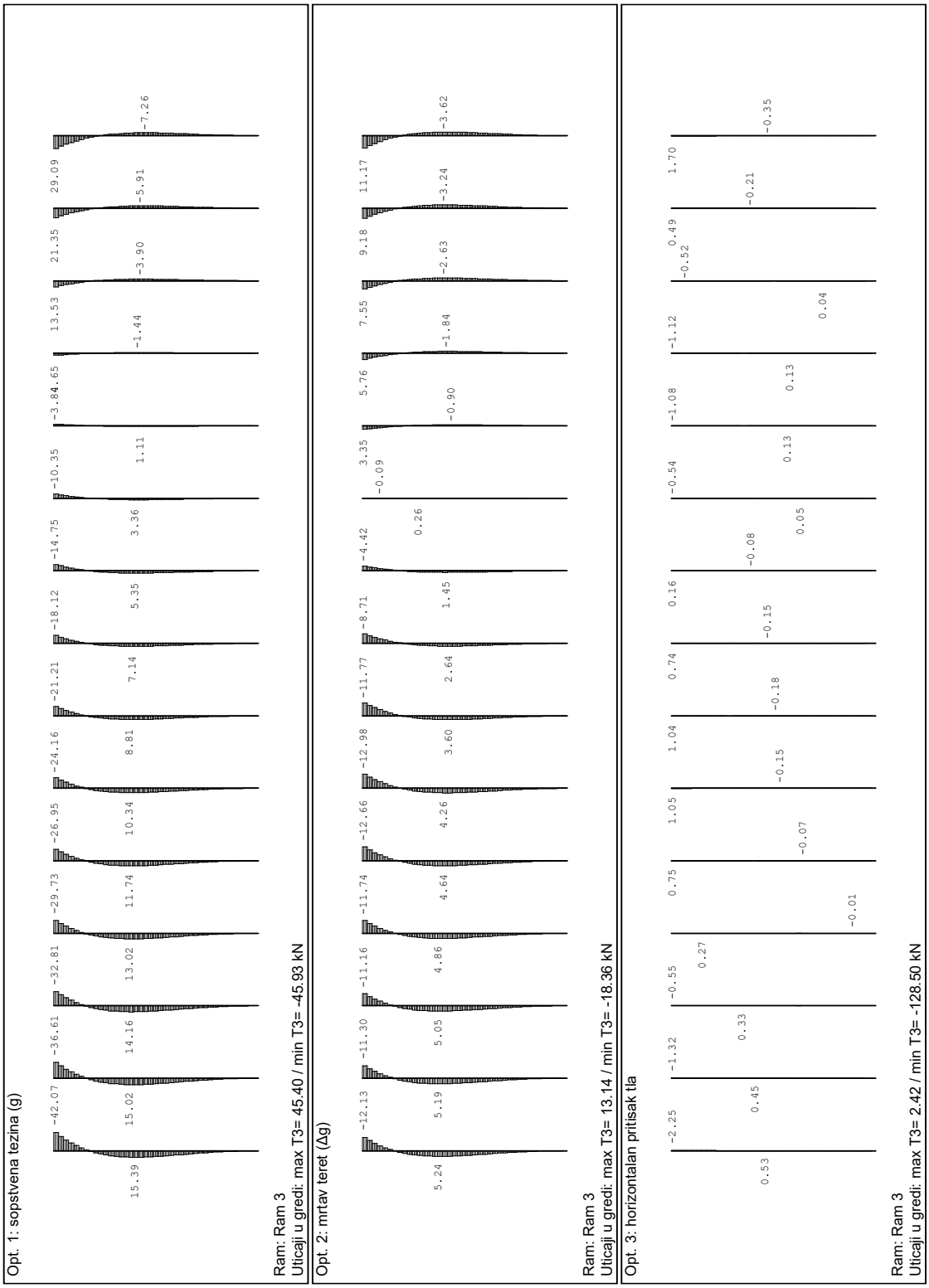

Opt. 7: KP
Ram: Ram 3
Uticaji u gredi: max T2= 8.83 / min T2= -28.37 kN
Opt. 8: voz na nasipu ispred
Ram: Ram 3
Uticaji u gredi: max T2= 8.41 / min T2= -25.59 kN
Opt. 9: voz na nasipu iza
Ram: Ram 3
Uticaji u gredi: max T2= 9.26 / min T2= -2.93 kN

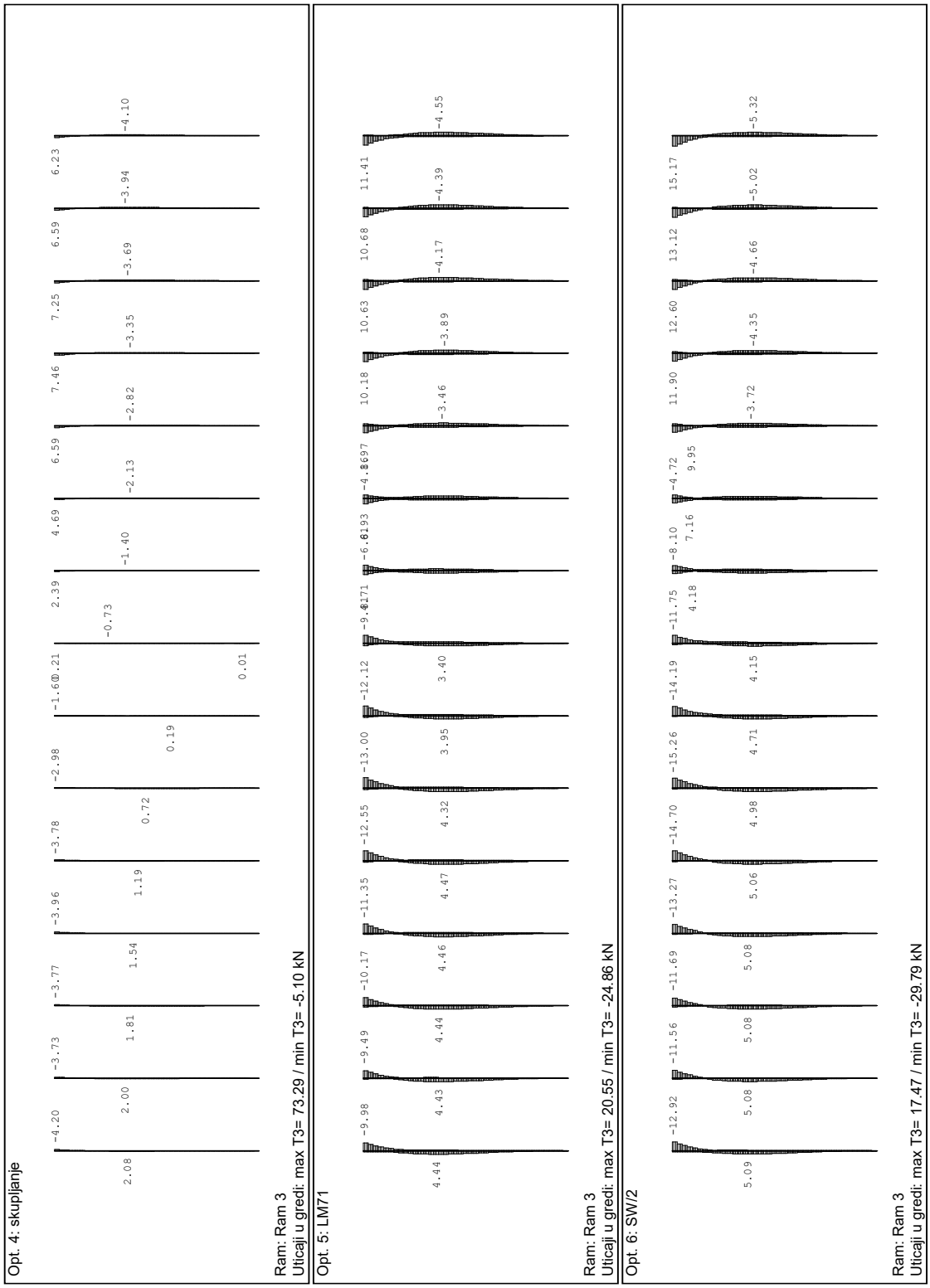

Opt. 10: voz ispod
0.57 0.60 0.52 0.37 0.37 0.63 1.00 1.11 0.99 0.85 0.69 0.45 0.22 0.05
-0.05 -0.05 -0.05 -0.05 -0.05 -0.07 -0.08 -0.07 -0.06 -0.05 -0.08 -0.15 -0.23
Ram: Ram 3
Uticaji u gredi: max T2= 9.40 / min T2= -10.43 kN
Opt. 11: komb temp 1
-496.19 -426.79 -363.41 -300.29 -234.87 -165.63 -92.64 -18.41 54.61 125.44 193.07 258.34 322.36 386.20 452.92
47.45 40.54 33.87 27.41 21.05 14.67 8.25 1.87 -4.57 -10.90 -17.21 -23.53 -29.93 -36.53 -43.32
Ram: Ram 3
Uticaji u gredi: max T2= 489.25 / min T2= -496.19 kN
Opt. 12: komb temp 2
-493.78 -425.09 -363.15 -301.73 -238.07 -170.37 -98.20 -22.44 54.40 129.65 201.18 266.58 327.45 387.47 450.96
47.34 40.44 33.78 27.38 21.06 14.72 8.33 1.88 -4.60 -11.06 -17.46 -23.78 -30.07 -36.60 -43.36
Ram: Ram 3
Uticaji u gredi: max T2= 486.78 / min T2= -493.78 kN

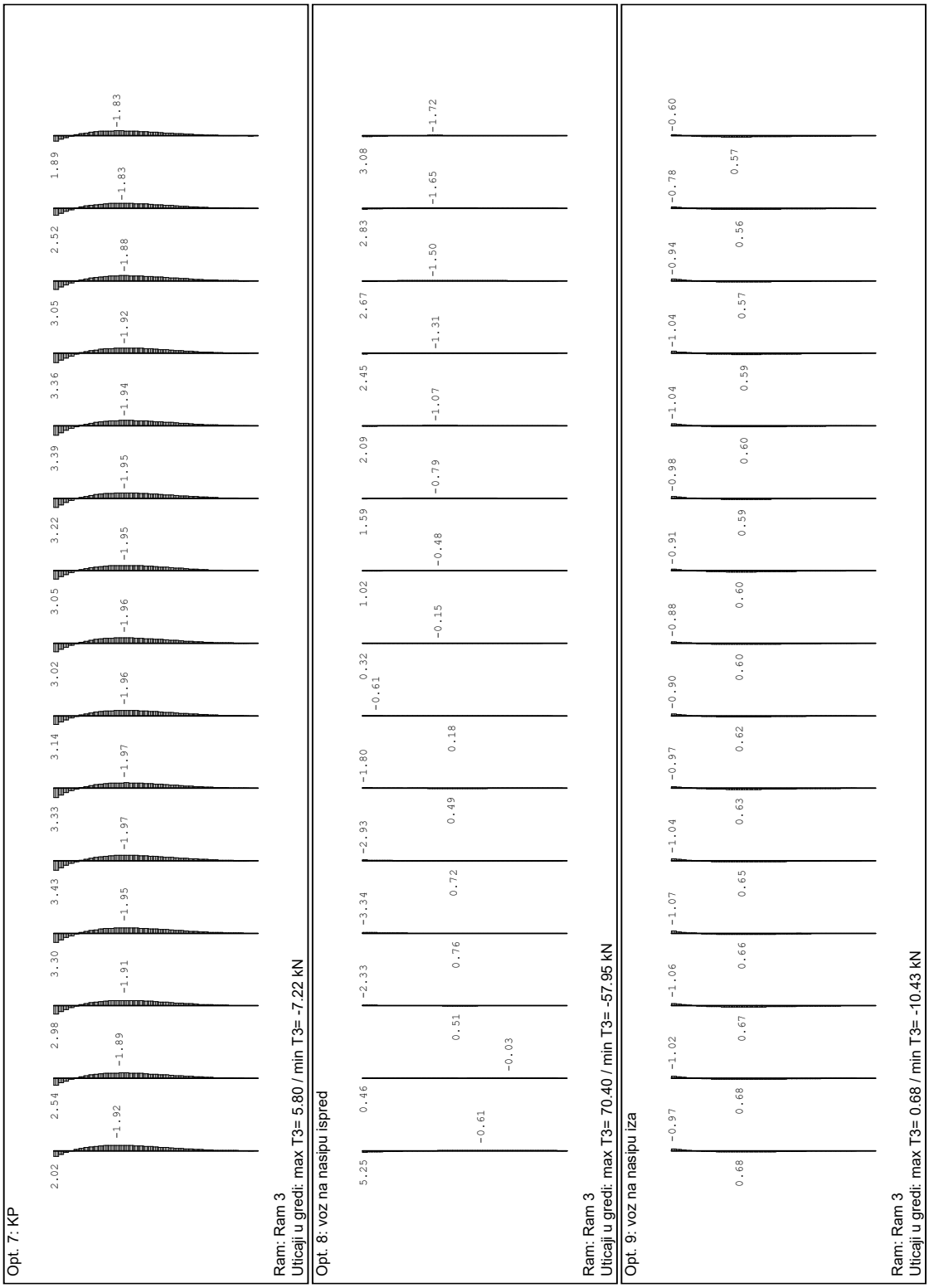

Opt. 13: komb temp 3
526.77
453.49
387.37
321.80
253.84
181.57
104.56
23.50
-50.03
-138.15
-214.32
-284.08
-349.11
-413.26
-481.09
-50.50
-43.14
-36.04
-29.20
-22.46
-15.70
-8.88
-2.00
4.91
11.79
18.61
25.35
32.07
39.04
46.25
Ram: Ram 3
Uticaji u gredi: max T2= 526.77 / min T2= -519.31 kN
Opt. 14: komb temp 4
529.19
455.18
387.63
320.36
250.64
176.83
99.01
19.78
-58.25
-133.94
-206.21
-275.84
-344.02
-411.99
-483.05
-50.61
-43.24
-36.12
-29.24
-22.45
-15.65
-8.81
-1.99
4.87
11.63
18.36
25.10
31.93
38.97
46.21
Ram: Ram 3
Uticaji u gredi: max T2= 529.19 / min T2= -521.79 kN
Opt. 15: komb temp 5
392.54
338.33
290.25
242.87
193.75
141.16
84.27
22.29
-40.29
-108.05
-169.29
-221.74
-267.19
-311.29
-358.76
-37.76
-32.25
-26.94
-21.87
-16.86
-11.86
-6.82
-1.63
3.74
9.04
14.26
19.28
24.23
29.35
34.73
Ram: Ram 3
Uticaji u gredi: max T2= 461.50 / min T2= -386.88 kN

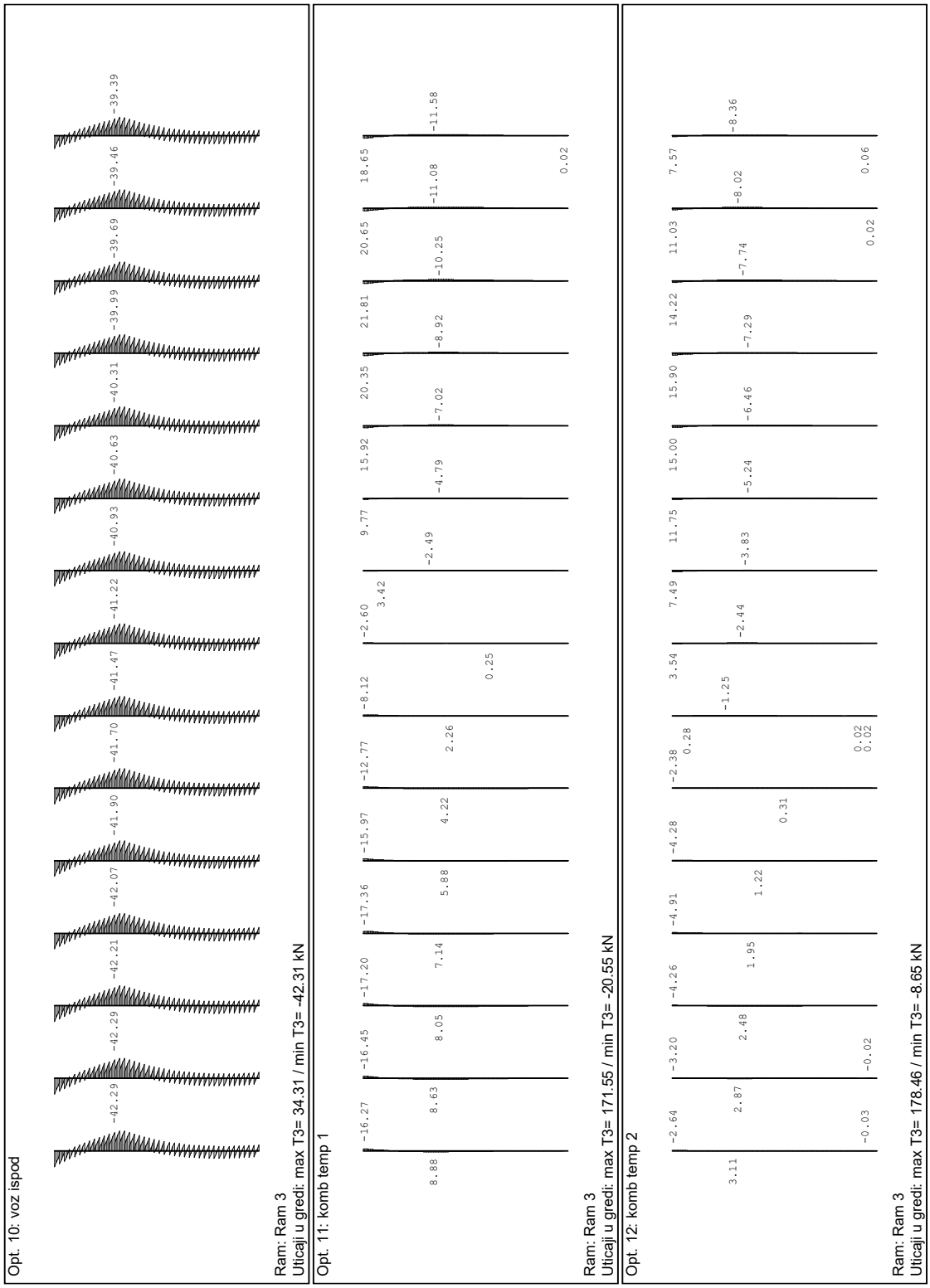

Opt. 16: komb temp 6
-38.06
399.44
-32.53
343.17
-27.18
291.00
-21.96
238.75
-16.83
184.61
-11.69
127.63
-6.58
68.40
-1.80
-96.02
3.61
-146.11
8.56
-198.20
13.52
-252.65
18.62
-307.65
23.83
364.34
29.15
34.61
Ram: Ram 3
Uticaji u gredi: max T2= 399.44 / min T2= -393.95 kN
Opt. 17: komb temp 7
-374.35
-321.51
35.64
-272.45
30.45
-223.31
25.44
-172.40
20.54
-118.88
15.73
-63.41
10.90
-9.61
6.12
40.83
1.63
-3.40
89.24
-8.04
136.60
-12.71
187.16
-17.51
239.98
-22.41
292.26
-27.41
345.38
-32.53
Ram: Ram 3
Uticaji u gredi: max T2= 373.06 / min T2= -374.35 kN
Opt. 18: komb temp 8
-367.79
-317.04
35.39
-272.09
30.23
-227.82
25.25
-181.92
20.50
-132.76
15.81
-79.50
11.13
-21.08
6.41
40.57
1.55
-3.51
101.67
-8.49
159.43
-13.39
208.61
-18.10
250.95
-22.73
291.95
-27.53
336.17
-32.56
Ram: Ram 3
Uticaji u gredi: max T2= 362.48 / min T2= -444.93 kN

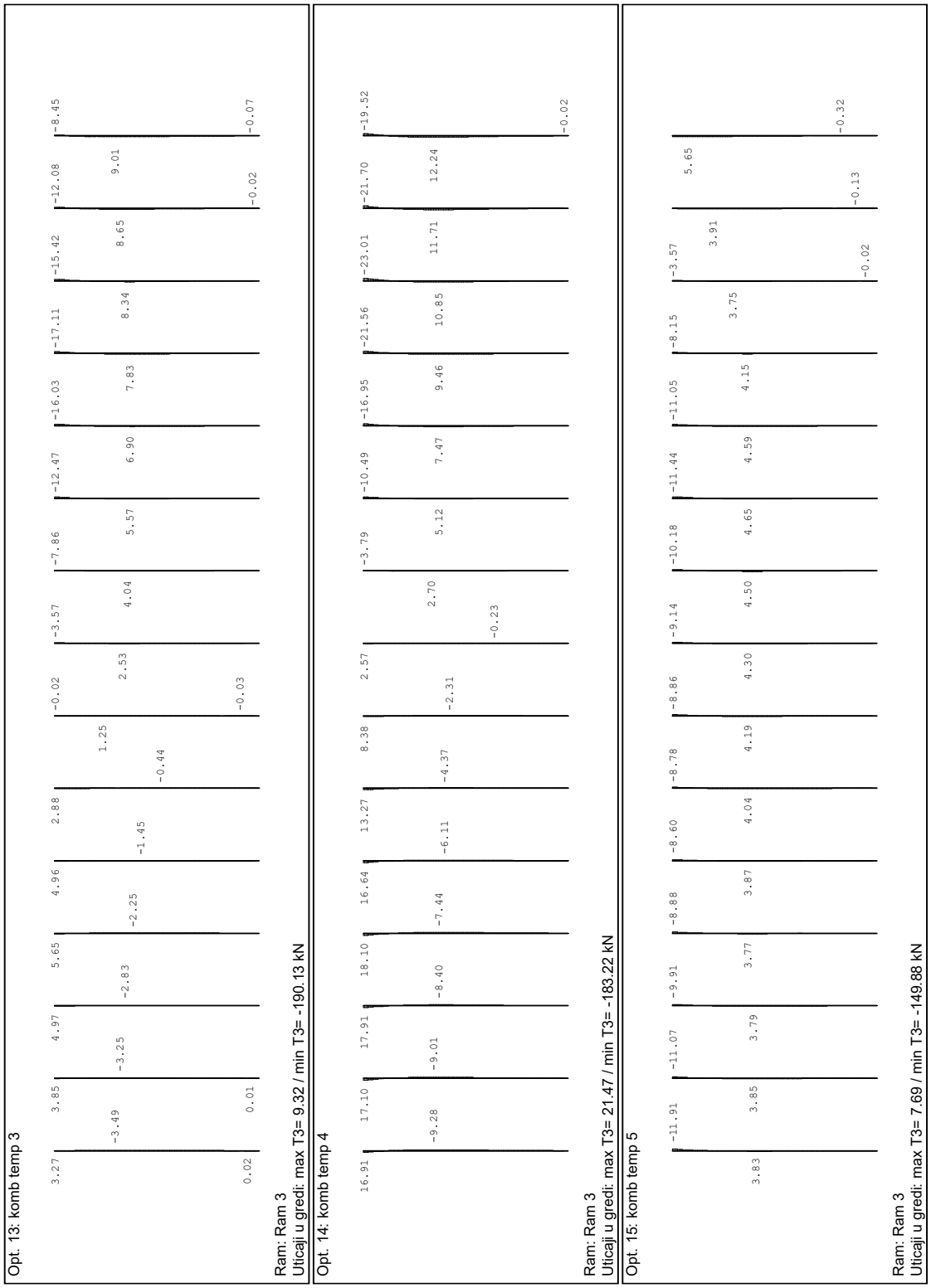

Opt. 19: BU
-0.28
-0.29
-0.31
-0.31
-0.32
-0.33
-0.32
-0.24
-0.18
-0.20
-0.20
-0.21
-0.24
-0.27
-0.27
-0.27
0.03
0.03
0.03
0.03
0.03
0.03
0.03
0.04
0.03
0.03
0.03
0.03
0.03
Ram: Ram 3
Uticaji u gredi: max T2= 4.53 / min T2= -5.65 kN
Opt. 20: Sx
-88.43
-93.80
88.43
-103.56
93.80
-115.24
103.56
-127.77
115.24
-138.13
127.77
-143.78
138.13
-145.10
143.78
-143.57
145.10
-139.26
143.57
-130.75
139.26
-118.64
130.75
-106.80
118.64
-97.11
106.80
-90.07
97.11
90.07
Ram: Ram 3
Uticaji u gredi: max T2= 395.59 / min T2= -395.59 kN
Opt. 21: Sy
-32.61
-32.76
32.61
-30.72
32.76
-26.51
30.72
-23.24
26.51
-23.25
23.24
-25.61
23.25
-29.23
25.61
-30.49
29.23
-26.33
30.49
-20.24
26.33
-18.75
20.24
-23.49
18.75
-29.26
23.49
-32.05
29.26
32.05
Ram: Ram 3
Uticaji u gredi: max T2= 218.19 / min T2= -218.19 kN

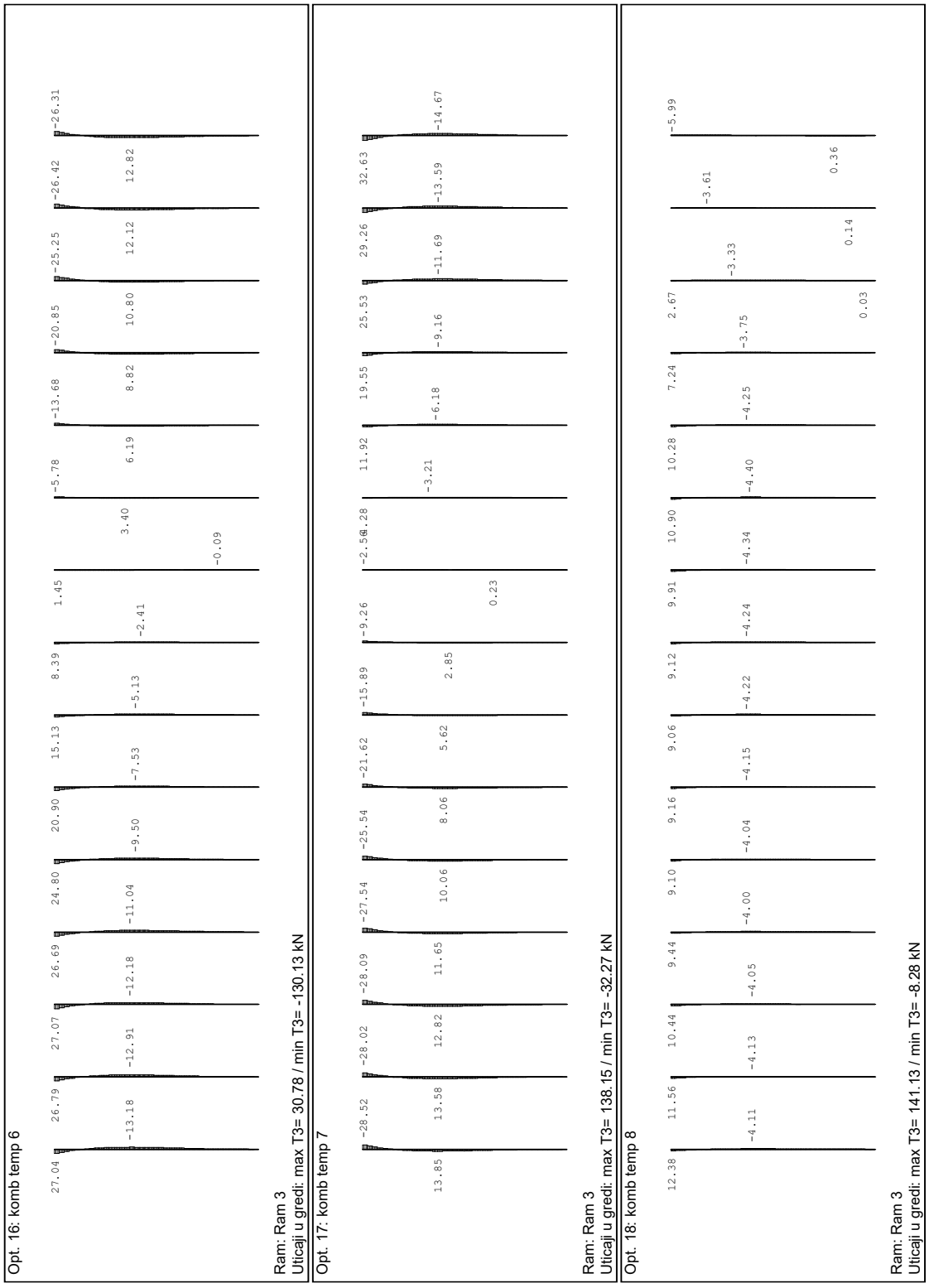

Opt. 1: sopstvena tezina (g)
15.39 -42.07 -36.61 -32.81 -29.73 -26.95 -24.16 -21.21 -18.12 -14.75 -10.35 -3.84.65 13.53 21.35 29.09 -7.26
15.02 14.16 13.02 11.74 10.34 8.81 7.14 5.35 3.36 1.11 -1.44 -3.90 -5.91
Ram: Ram 3
Uticaji u gredi: max T3= 45.40 / min T3= -45.93 kN
Opt. 2: mrtav teret (Δg)
5.24 -12.13 -11.30 -11.16 -11.74 -12.66 -12.98 -11.77 -8.71 -4.42 3.35 5.76 7.55 9.18 11.17 -3.62
5.19 5.05 4.86 4.64 4.26 3.60 2.64 1.45 0.26 -0.09 -0.90 -1.84 -2.63 -3.24
Ram: Ram 3
Uticaji u gredi: max T3= 13.14 / min T3= -18.36 kN
Opt. 3: horizontalan pritisak tla
0.53 -2.25 0.45 -1.32 0.33 -0.55 0.27 0.75 -0.01 1.05 -0.07 1.04 -0.15 0.74 -0.18 0.16 -0.15 -0.08 0.05 -0.54 0.13 -1.08 0.13 -1.12 0.04 0.49 -0.52 -0.21 1.70 -0.35
Ram: Ram 3
Uticaji u gredi: max T3= 2.42 / min T3= -128.50 kN

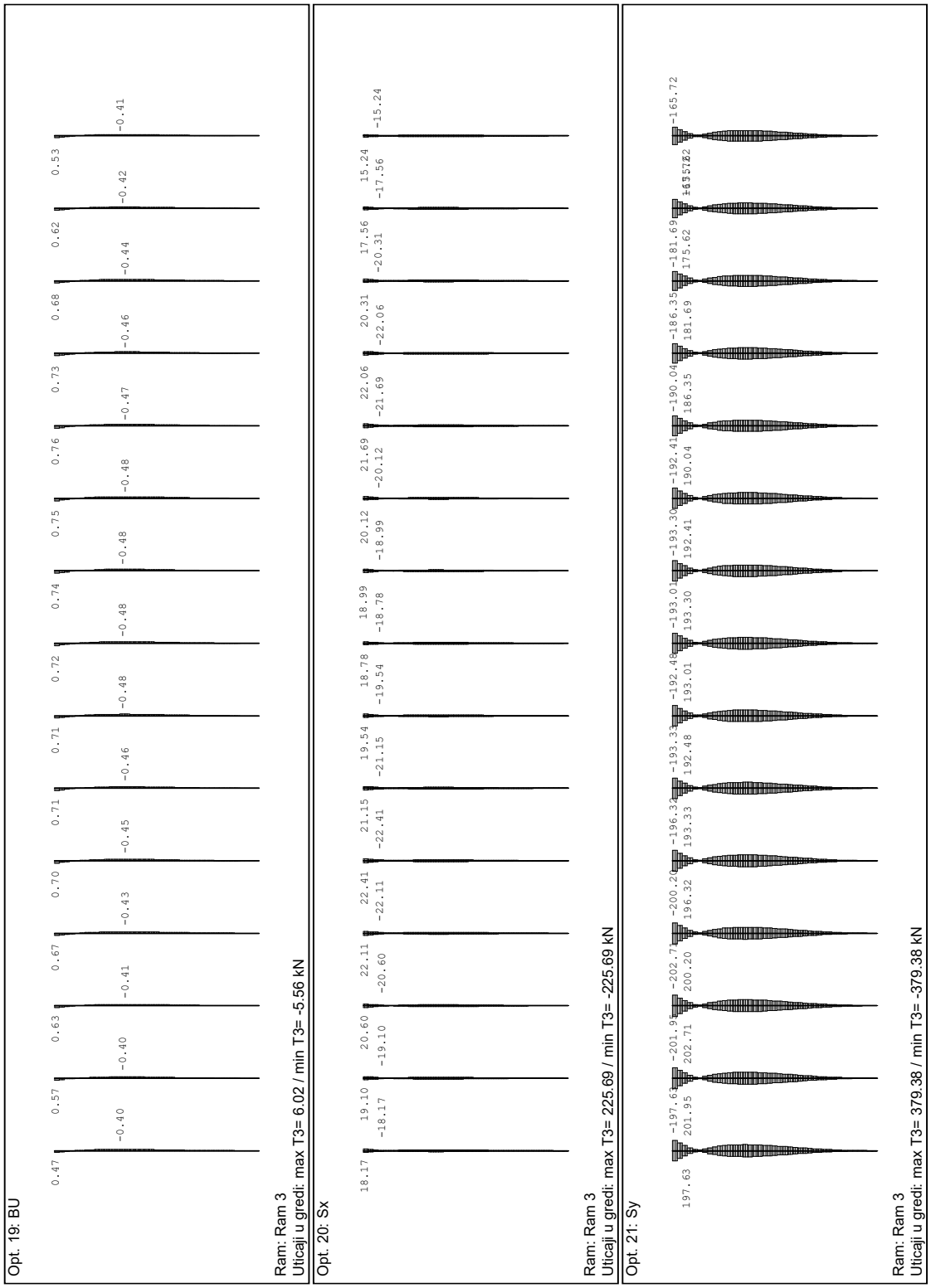

Opt. 4: skupljanje
Ram: Ram 3
Uticaji u gredi: max T3= 73.29 / min T3= -5.10 kN
Opt. 5: LM71
Ram: Ram 3
Uticaji u gredi: max T3= 20.55 / min T3= -24.86 kN
Opt. 6: SW/2
Ram: Ram 3
Uticaji u gredi: max T3= 17.47 / min T3= -29.79 kN

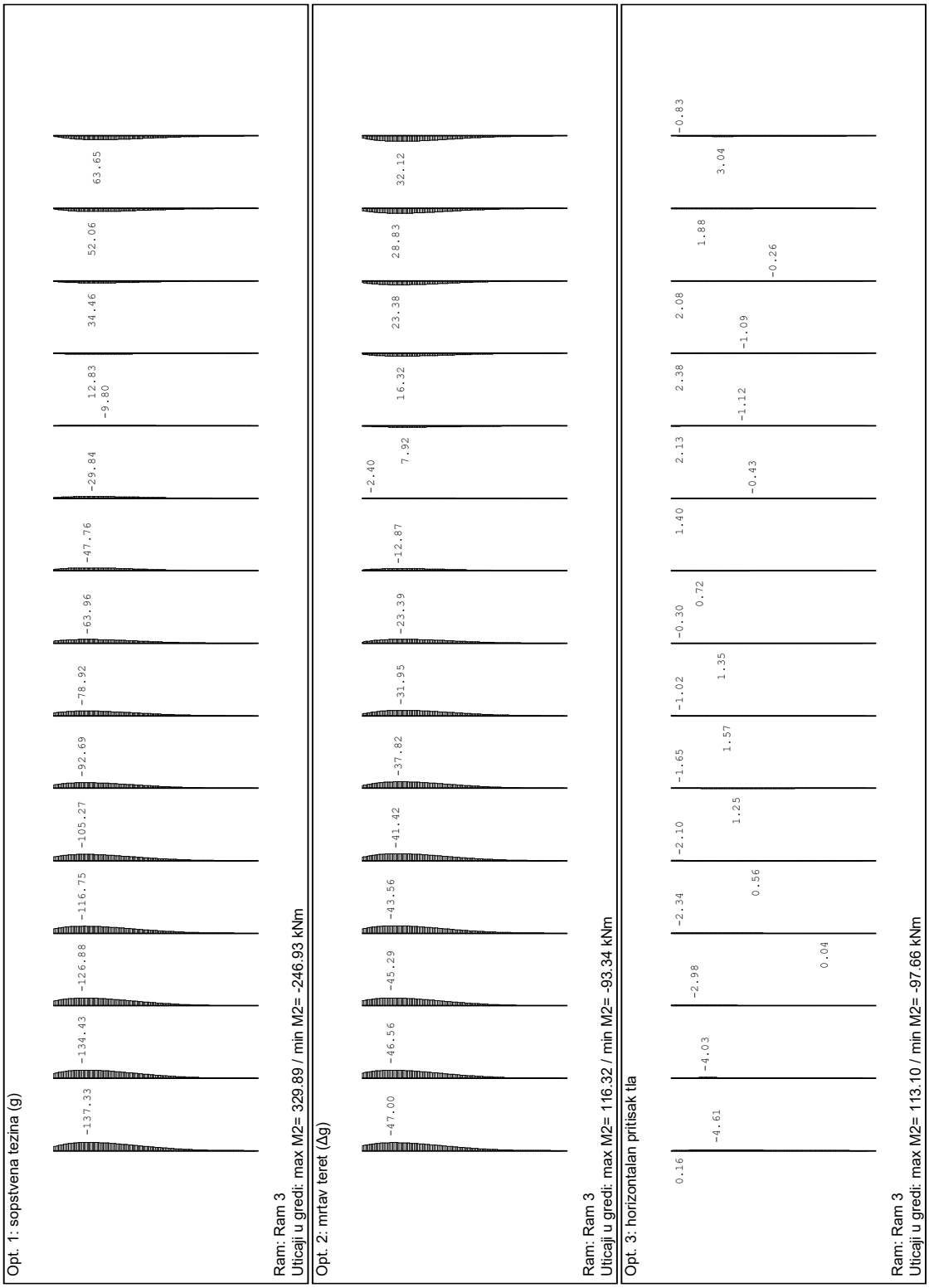

Opt. 7: KP
2.02 2.54 2.98 3.30 3.43 3.33 3.14 3.02 3.05 3.22 3.39 3.36 3.05 2.52 1.89
-1.92 -1.89 -1.91 -1.95 -1.97 -1.97 -1.96 -1.96 -1.95 -1.95 -1.94 -1.92 -1.88 -1.83 -1.83
Ram: Ram 3
Uticaji u gredi: max T3= 5.80 / min T3= -7.22 kN
Opt. 8: voz na nasipu ispred
5.25 0.46 -2.33 -3.34 -2.93 -1.80 -0.61 0.32 1.02 1.59 2.09 2.45 2.67 2.83 3.08
-0.61 0.51 0.76 0.72 0.49 0.18 -0.15 -0.48 -0.79 -1.07 -1.31 -1.50 -1.65 -1.72
-0.03
Ram: Ram 3
Uticaji u gredi: max T3= 70.40 / min T3= -57.95 kN
Opt. 9: voz na nasipu iza
0.68 -0.97 -1.02 -1.06 -1.07 -1.04 -0.97 -0.90 -0.88 -0.91 -0.98 -1.04 -1.04 -0.94 -0.78 -0.60
0.68 0.67 0.66 0.65 0.63 0.62 0.60 0.60 0.59 0.60 0.59 0.57 0.56 0.57
Ram: Ram 3
Uticaji u gredi: max T3= 0.68 / min T3= -10.43 kN

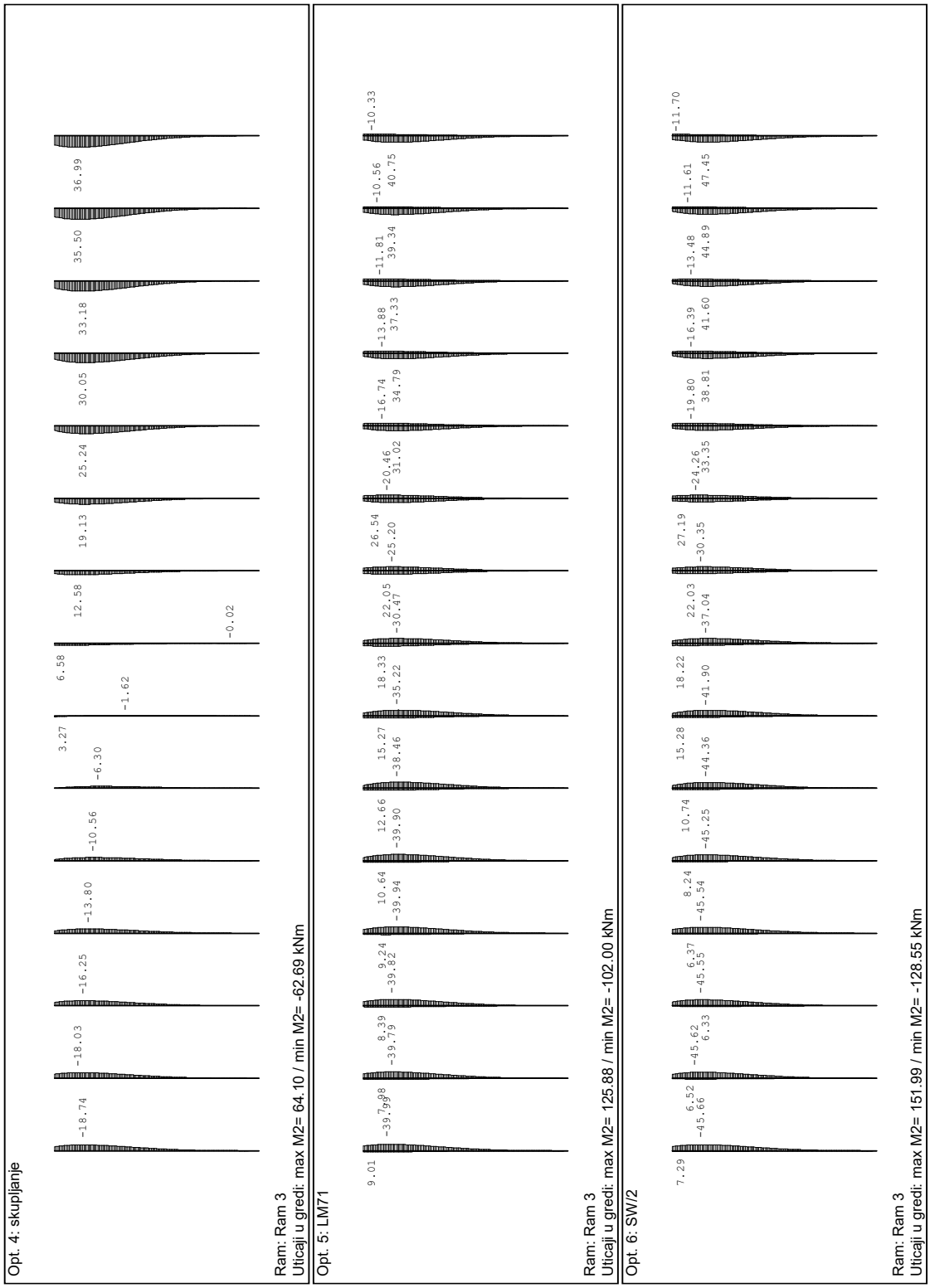

Opt. 10: voz ispod
-42.29
-42.29
-42.21
-42.07
-41.90
-41.70
-41.47
-41.22
-40.93
-40.63
-40.31
-39.99
-39.69
-39.46
-39.39
Ram: Ram 3
Uticaji u gredi: max T3= 34.31 / min T3= -42.31 kN
Opt. 11: komb temp 1
-16.27
8.88
-16.45
8.63
-17.20
8.05
-17.36
7.14
-15.97
5.88
-12.77
4.22
-8.12
2.26
-2.60
0.25
3.42
-2.49
9.77
-4.79
15.92
-7.02
20.35
-8.92
21.81
-10.25
20.65
-11.08
18.65
-11.58
0.02
Ram: Ram 3
Uticaji u gredi: max T3= 171.55 / min T3= -20.55 kN
Opt. 12: komb temp 2
-2.64
3.11
-3.20
2.87
-4.26
2.48
-4.91
1.95
-4.28
1.22
-2.38
0.31
0.28
-1.25
3.54
-2.44
7.49
-3.83
11.75
-5.24
15.00
-6.46
15.90
-7.29
14.22
-7.74
11.03
-8.02
7.57
-8.36
-0.03
-0.02
0.02
0.02
0.02
0.06
Ram: Ram 3
Uticaji u gredi: max T3= 178.46 / min T3= -8.65 kN

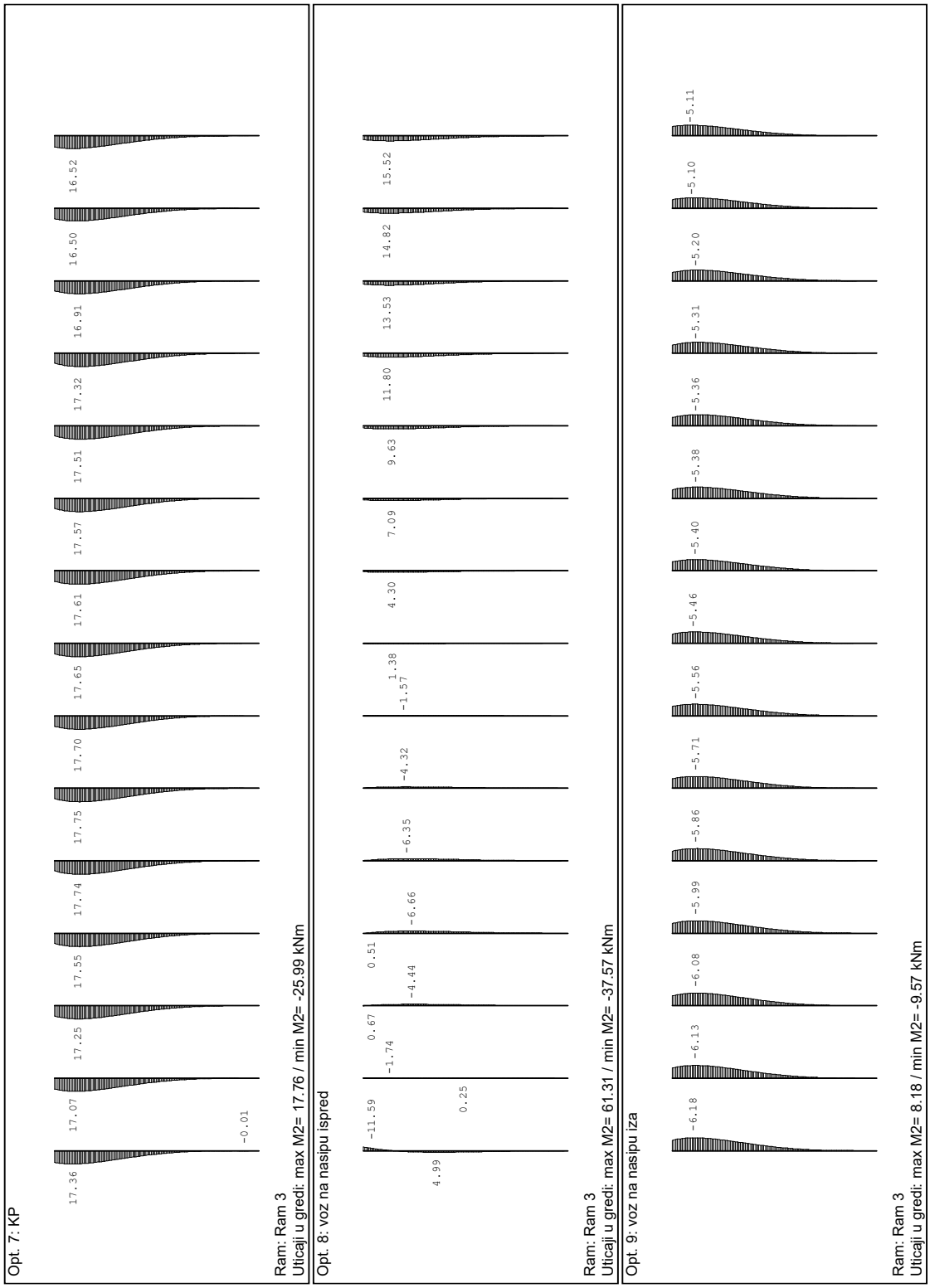

Opt. 13: komb temp 3
3.27 3.85 4.97 5.65 4.96 2.88 -0.02 -3.57 -7.86 -12.47 -16.03 -17.11 -15.42 -12.08 -8.45
-3.49 -3.25 -2.83 -2.25 -1.45 1.25 2.53 4.04 5.57 6.90 7.83 8.34 8.65 9.01
-0.44
0.02 0.01 -0.03 -0.02 -0.07
Ram: Ram 3
Uticaji u gredi: max T3= 9.32 / min T3= -190.13 kN
Opt. 14: komb temp 4
16.91 17.10 17.91 18.10 16.64 13.27 8.38 2.57 -3.79 -10.49 -16.95 -21.56 -23.01 -21.70 -19.52
-9.28 -9.01 -8.40 -7.44 -6.11 -4.37 -2.31 -0.23 2.70 5.12 7.47 9.46 10.85 11.71 12.24
-0.02
Ram: Ram 3
Uticaji u gredi: max T3= 21.47 / min T3= -183.22 kN
Opt. 15: komb temp 5
3.83 3.85 3.79 3.77 3.87 4.04 4.19 4.30 4.50 4.65 4.59 4.15 3.75 3.91 5.65
-11.91 -11.07 -9.91 -8.88 -8.60 -8.78 -8.86 -9.14 -10.18 -11.44 -11.05 -8.15 -3.57
-0.02 -0.13 -0.32
Ram: Ram 3
Uticaji u gredi: max T3= 7.69 / min T3= -149.88 kN

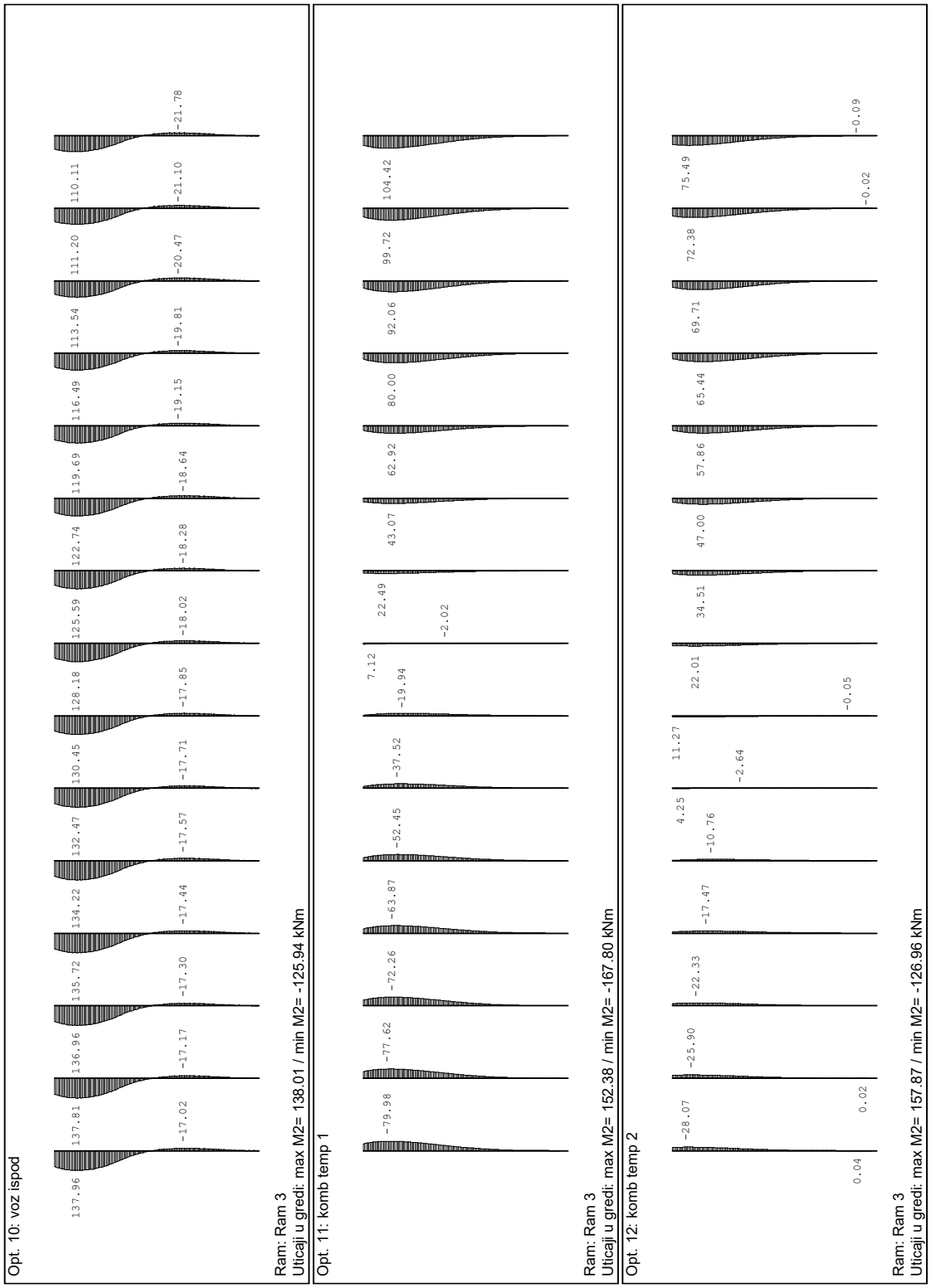

Opt. 16: komb temp 6
27.04 26.79 27.07 26.69 24.80 20.90 15.13 8.39 1.45 -5.78 -13.68 -20.85 -25.25 -26.42 -26.31
-13.18 -12.91 -12.18 -11.04 -9.50 -7.53 -5.13 -2.41 3.40 6.19 8.82 10.80 12.12 12.82
-0.09
Ram: Ram 3
Uticaji u gredi: max T3= 30.78 / min T3= -130.13 kN
Opt. 17: komb temp 7
-28.52 -28.02 -28.09 -27.54 -25.54 -21.62 -15.89 -9.26 -2.50 1.28 11.92 19.55 25.53 29.26 32.63
13.85 13.58 12.82 11.65 10.06 8.06 5.62 2.85 0.23 -3.21 -6.18 -9.16 -11.69 -13.59 -14.67
Ram: Ram 3
Uticaji u gredi: max T3= 138.15 / min T3= -32.27 kN
Opt. 18: komb temp 8
12.38 11.56 10.44 9.44 9.10 9.16 9.06 9.12 9.91 10.90 10.28 7.24 2.67 -3.61 -5.99
-4.11 -4.13 -4.05 -4.00 -4.04 -4.15 -4.22 -4.24 -4.34 -4.40 -4.25 -3.75 -3.33 0.14 0.36
0.03
Ram: Ram 3
Uticaji u gredi: max T3= 141.13 / min T3= -8.28 kN

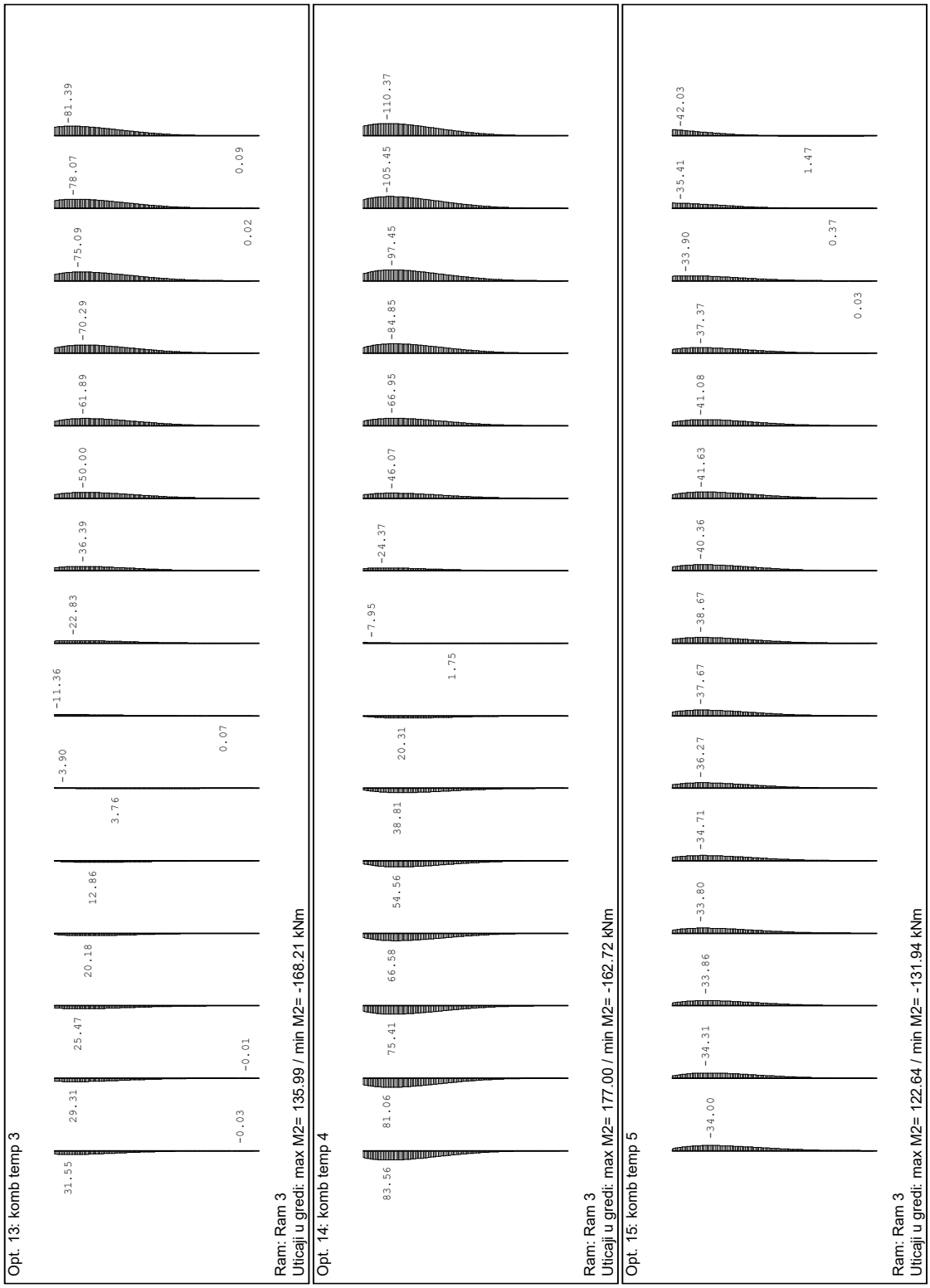

Opt. 19: BU
Ram: Ram 3
Uticaji u gredi: max T3= 6.02 / min T3= -5.56 kN
Opt. 20: Sx
Ram: Ram 3
Uticaji u gredi: max T3= 225.69 / min T3= -225.69 kN
Opt. 21: Sy
Ram: Ram 3
Uticaji u gredi: max T3= 379.38 / min T3= -379.38 kN

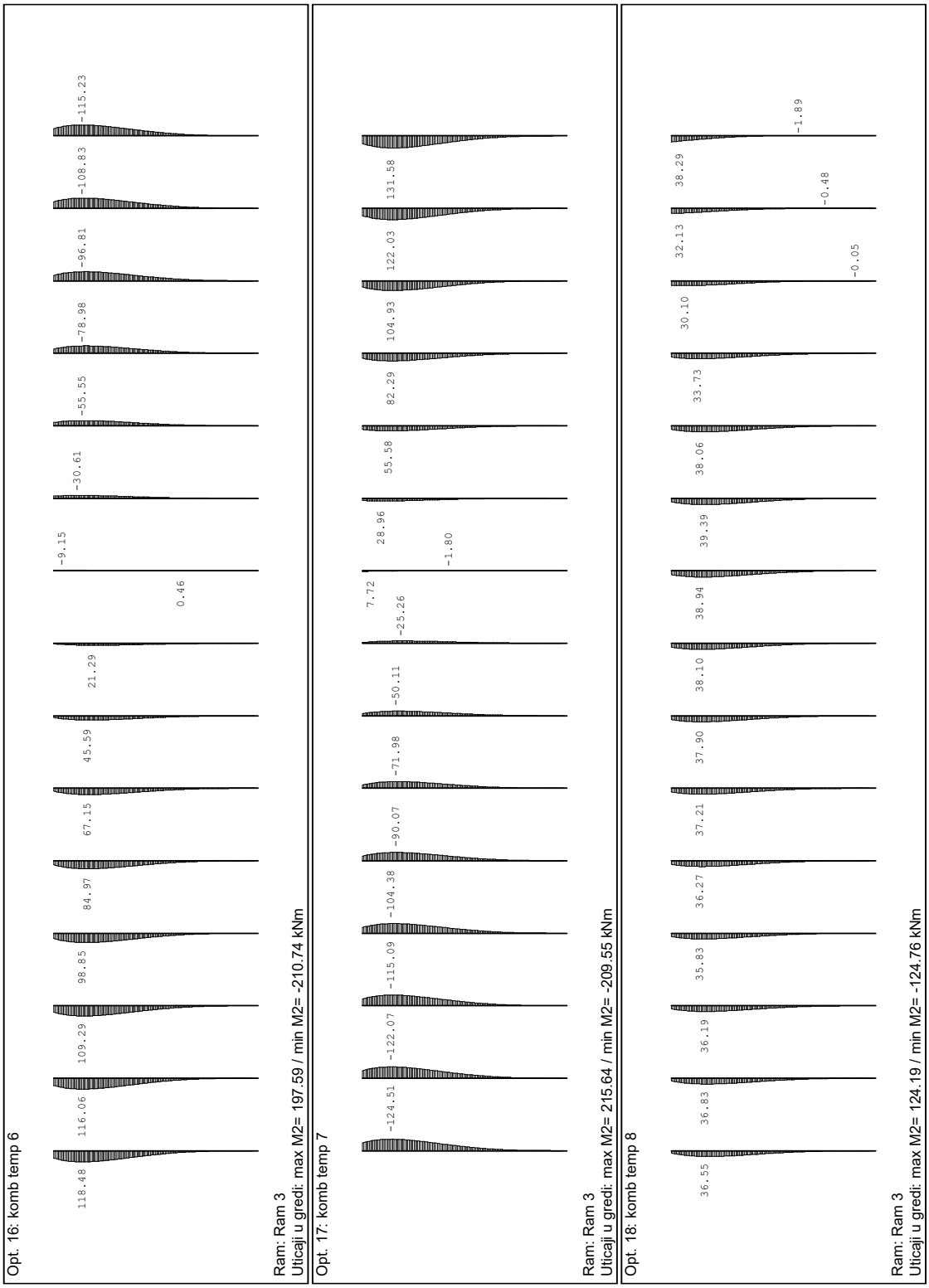

Opt. 1: sopstvena tezina (g)
-137.33
-134.43
-126.88
-116.75
-105.27
-92.69
-78.92
-63.96
-47.76
-29.84
-9.80
12.83
34.46
52.06
63.65
Ram: Ram 3
Uticaji u gredi: max M2= 329.89 / min M2= -246.93 kNm
Opt. 2: mrtav teret (Δg)
-47.00
-46.56
-45.29
-43.56
-41.42
-37.82
-31.95
-23.39
-12.87
-2.40
7.92
16.32
23.38
28.83
32.12
Ram: Ram 3
Uticaji u gredi: max M2= 116.32 / min M2= -93.34 kNm
Opt. 3: horizontalan pritisak tla
0.16
-4.61
-4.03
-2.98
-2.34
0.04
-2.10
0.56
-1.65
1.25
-1.02
1.57
-0.30
1.35
1.40
0.72
2.13
-0.43
2.38
-1.12
2.08
-1.09
1.88
-0.26
3.04
-0.83
Ram: Ram 3
Uticaji u gredi: max M2= 113.10 / min M2= -97.66 kNm

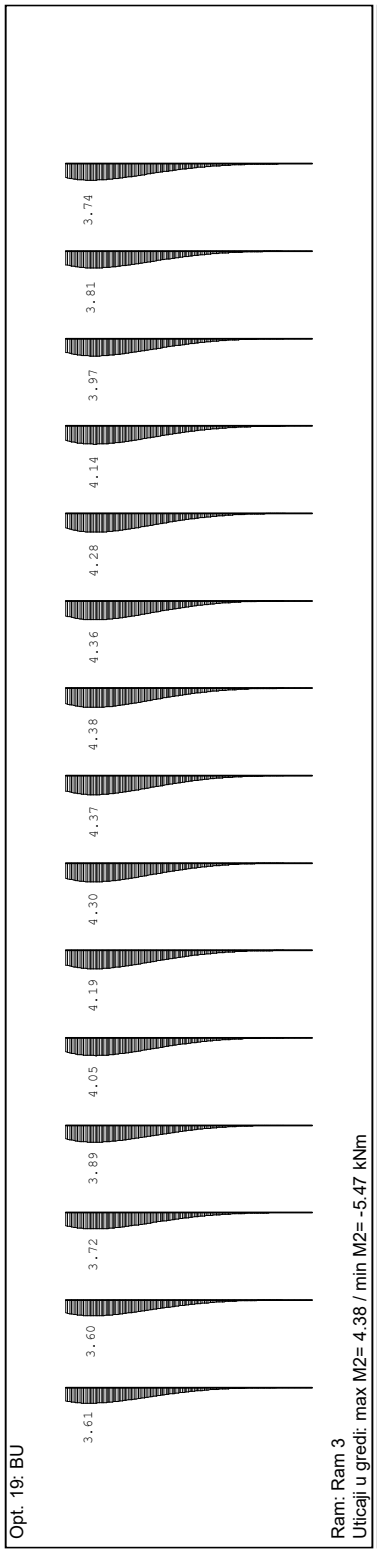

Opt. 4: skupljanje
-18.74
-18.03
-16.25
-13.80
-10.56
-6.30
3.27
-1.62
6.58
12.58
-0.02
19.13
25.24
30.05
33.18
35.50
36.99
Ram: Ram 3
Uticaji u gredi: max M2= 64.10 / min M2= -62.69 kNm
Opt. 5: LM71
9.01
-39.98
-39.79
-39.82
-39.94
-39.90
-38.46
-35.22
-30.47
-25.20
26.54
-20.46
31.02
-16.74
34.79
-13.88
37.33
-11.81
39.34
-10.56
40.75
-10.33
Ram: Ram 3
Uticaji u gredi: max M2= 125.88 / min M2= -102.00 kNm
Opt. 6: SW/2
7.29
-45.66
-45.62
-45.55
-45.54
-45.25
-44.36
-41.90
-37.04
-30.35
27.19
-24.26
33.35
-19.80
38.81
-16.39
41.60
-13.48
44.89
-11.61
47.45
-11.70
Ram: Ram 3
Uticaji u gredi: max M2= 151.99 / min M2= -128.55 kNm

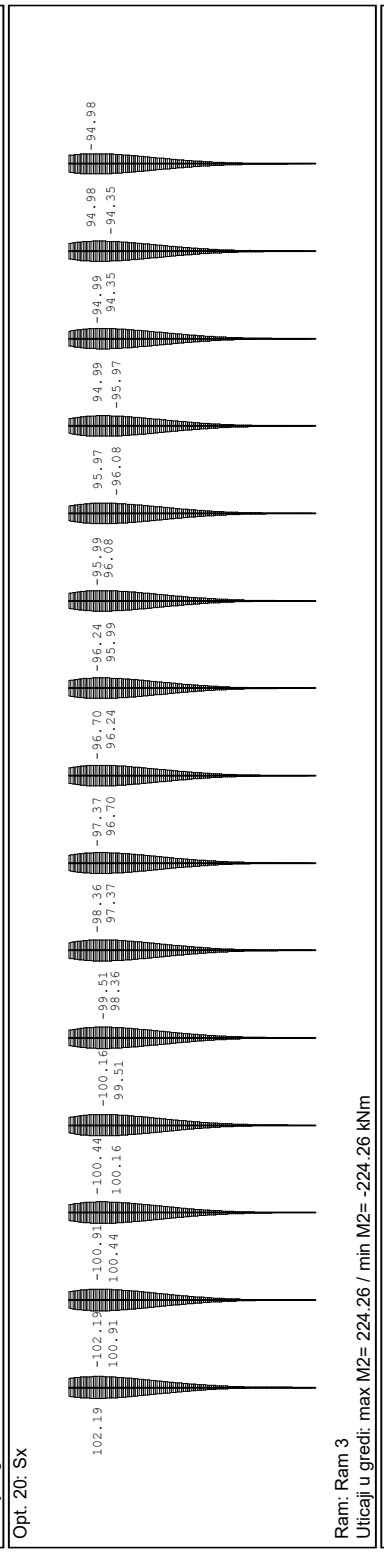

Opt. 7: KP
17.36
17.07
-0.01
17.25
17.55
17.74
17.75
17.70
17.65
17.61
17.57
17.51
17.32
16.91
16.50
16.52
Ram: Ram 3
Uticaji u gredi: max M2= 17.76 / min M2= -25.99 kNm
Opt. 8: voz na nasipu ispred
-11.59
4.99
-1.74
0.67
0.25
-4.44
0.51
-6.66
-6.35
-4.32
-1.57
1.38
4.30
7.09
9.63
11.80
13.53
14.82
15.52
Ram: Ram 3
Uticaji u gredi: max M2= 61.31 / min M2= -37.57 kNm
Opt. 9: voz na nasipu iza
-6.18
-6.13
-6.08
-5.99
-5.86
-5.71
-5.56
-5.46
-5.40
-5.38
-5.36
-5.31
-5.20
-5.10
-5.11
Ram: Ram 3
Uticaji u gredi: max M2= 8.18 / min M2= -9.57 kNm

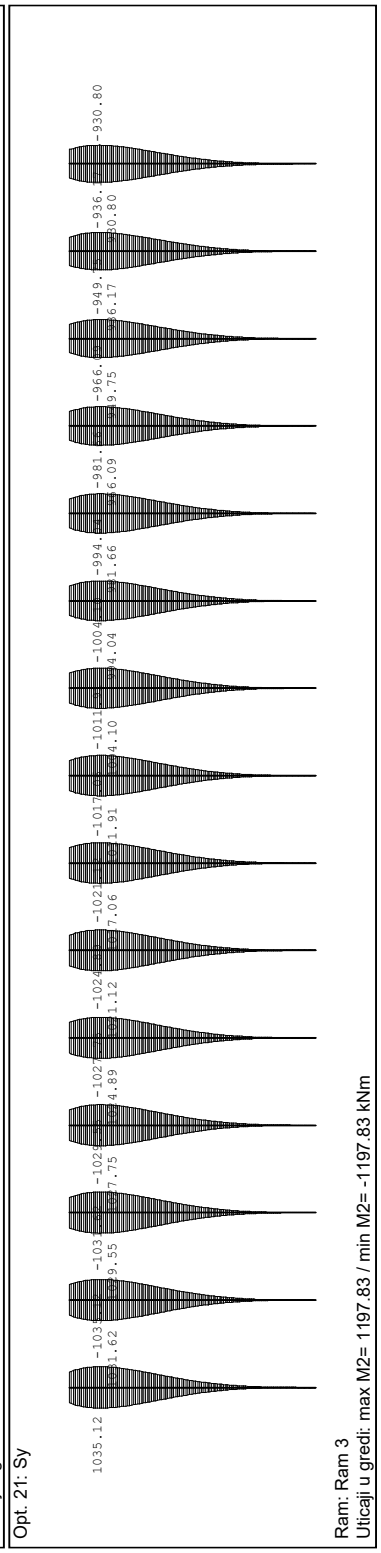

Opt. 10: voz ispod
137.96
137.81
136.96
135.72
134.22
132.47
130.45
128.18
125.59
122.74
119.69
116.49
113.54
111.20
110.11
-17.02
-17.17
-17.30
-17.44
-17.57
-17.71
-17.85
-18.02
-18.28
-18.64
-19.15
-19.81
-20.47
-21.10
-21.78
Ram: Ram 3
Uticaji u gredi: max M2= 138.01 / min M2= -125.94 kNm
Opt. 11: komb temp 1
-79.98
-77.62
-72.26
-63.87
-52.45
-37.52
-19.94
7.12
22.49
43.07
62.92
80.00
92.06
99.72
104.42
-2.02
Ram: Ram 3
Uticaji u gredi: max M2= 152.38 / min M2= -167.80 kNm
Opt. 12: komb temp 2
-28.07
-25.90
-22.33
-17.47
-10.76
4.25
11.27
22.01
34.51
47.00
57.86
65.44
69.71
72.38
75.49
0.04
0.02
-2.64
-0.05
-0.02
-0.09
Ram: Ram 3
Uticaji u gredi: max M2= 157.87 / min M2= -126.96 kNm

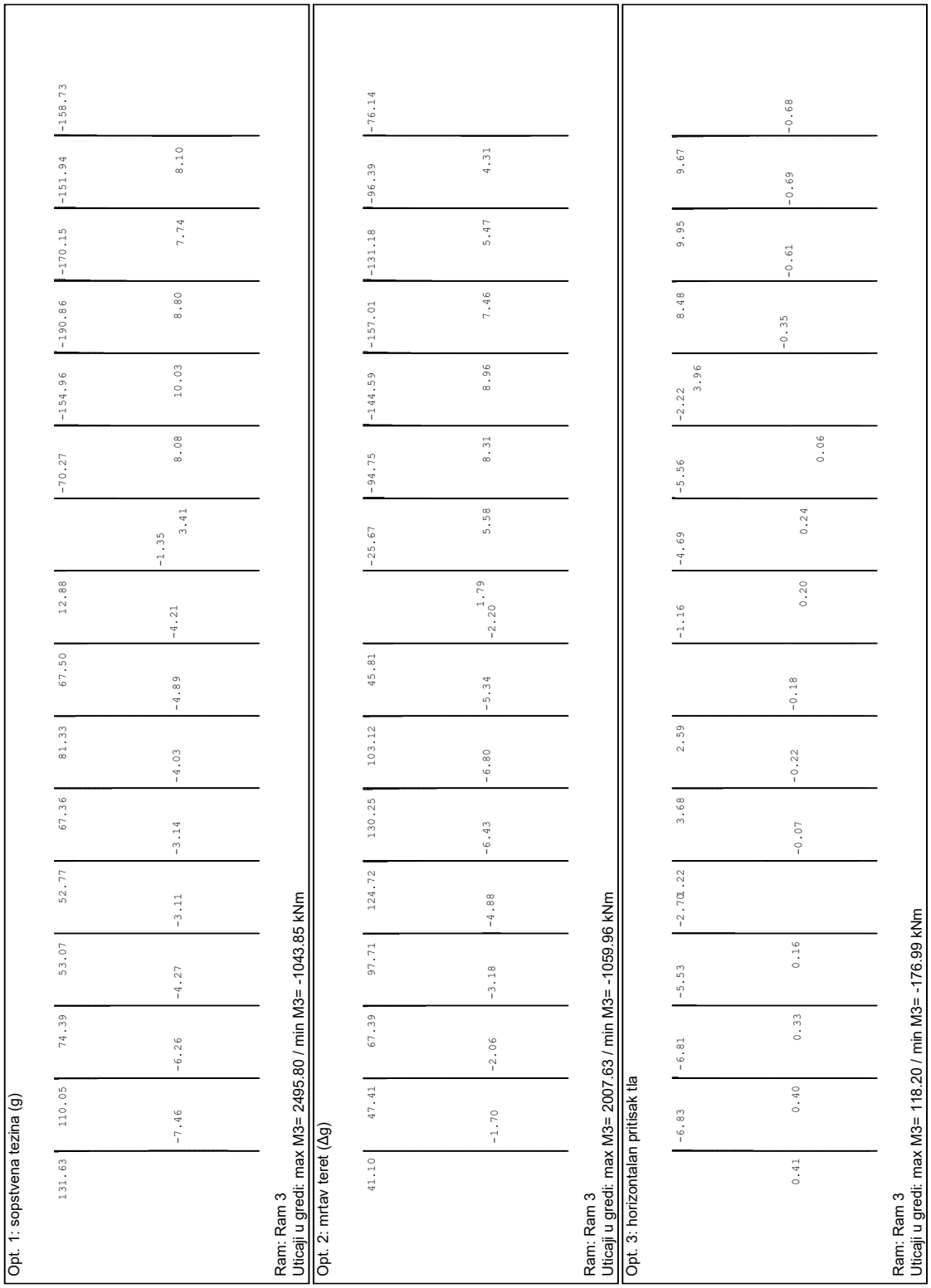

Opt. 13: komb temp 3
31.55
29.31
25.47
20.18
12.86
3.76
-3.90
-11.36
-22.83
-36.39
-50.00
-61.89
-70.29
-75.09
-78.07
-81.39
-0.03
-0.01
0.07
0.02
0.09
Ram: Ram 3
Uticaji u gredi: max M2= 135.99 / min M2= -168.21 kNm
Opt. 14: komb temp 4
83.56
81.06
75.41
66.58
54.56
38.81
20.31
1.75
-7.95
-24.37
-46.07
-66.95
-84.85
-97.45
-105.45
-110.37
Ram: Ram 3
Uticaji u gredi: max M2= 177.00 / min M2= -162.72 kNm
Opt. 15: komb temp 5
-34.00
-34.31
-33.86
-33.80
-34.71
-36.27
-37.67
-38.67
-40.36
-41.63
-41.08
-37.37
-33.90
-35.41
-42.03
0.03
0.37
1.47
Ram: Ram 3
Uticaji u gredi: max M2= 122.64 / min M2= -131.94 kNm

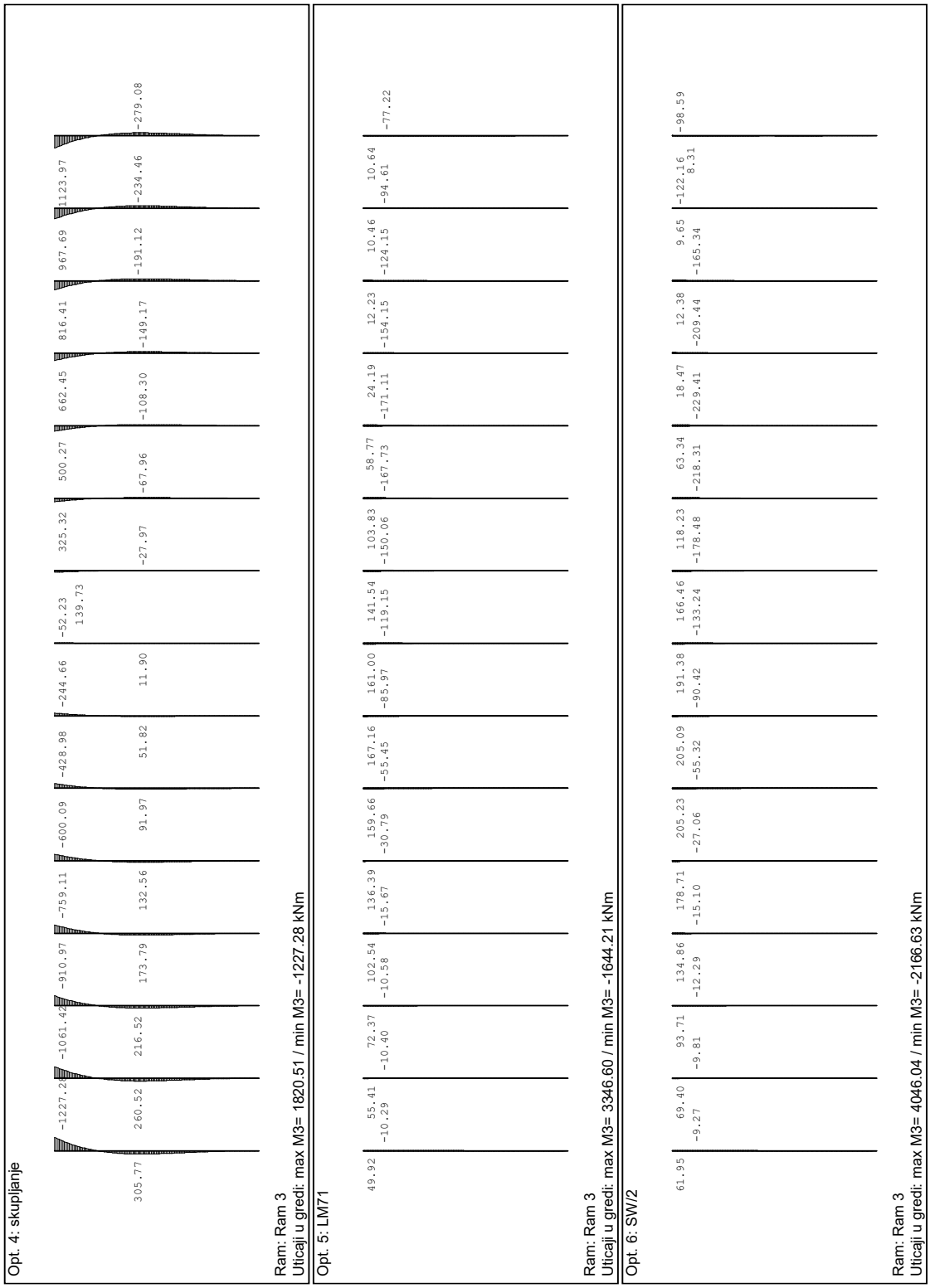

Opt. 16: komb temp 6
118.48
116.06
109.29
98.85
84.97
67.15
45.59
21.29
0.46
-9.15
-30.61
-55.55
-78.98
-96.81
-108.83
-115.23
Ram: Ram 3
Uticaji u gredi: max M2= 197.59 / min M2= -210.74 kNm
Opt. 17: komb temp 7
-124.51
-122.07
-115.09
-104.38
-90.07
-71.98
-50.11
-25.26
7.72
28.96
55.58
82.29
104.93
122.03
131.58
-1.80
Ram: Ram 3
Uticaji u gredi: max M2= 215.64 / min M2= -209.55 kNm
Opt. 18: komb temp 8
36.55
36.83
36.19
35.83
36.27
37.21
37.90
38.10
38.94
39.39
38.06
33.73
30.10
32.13
38.29
-0.05
-0.48
-1.89
Ram: Ram 3
Uticaji u gredi: max M2= 124.19 / min M2= -124.76 kNm

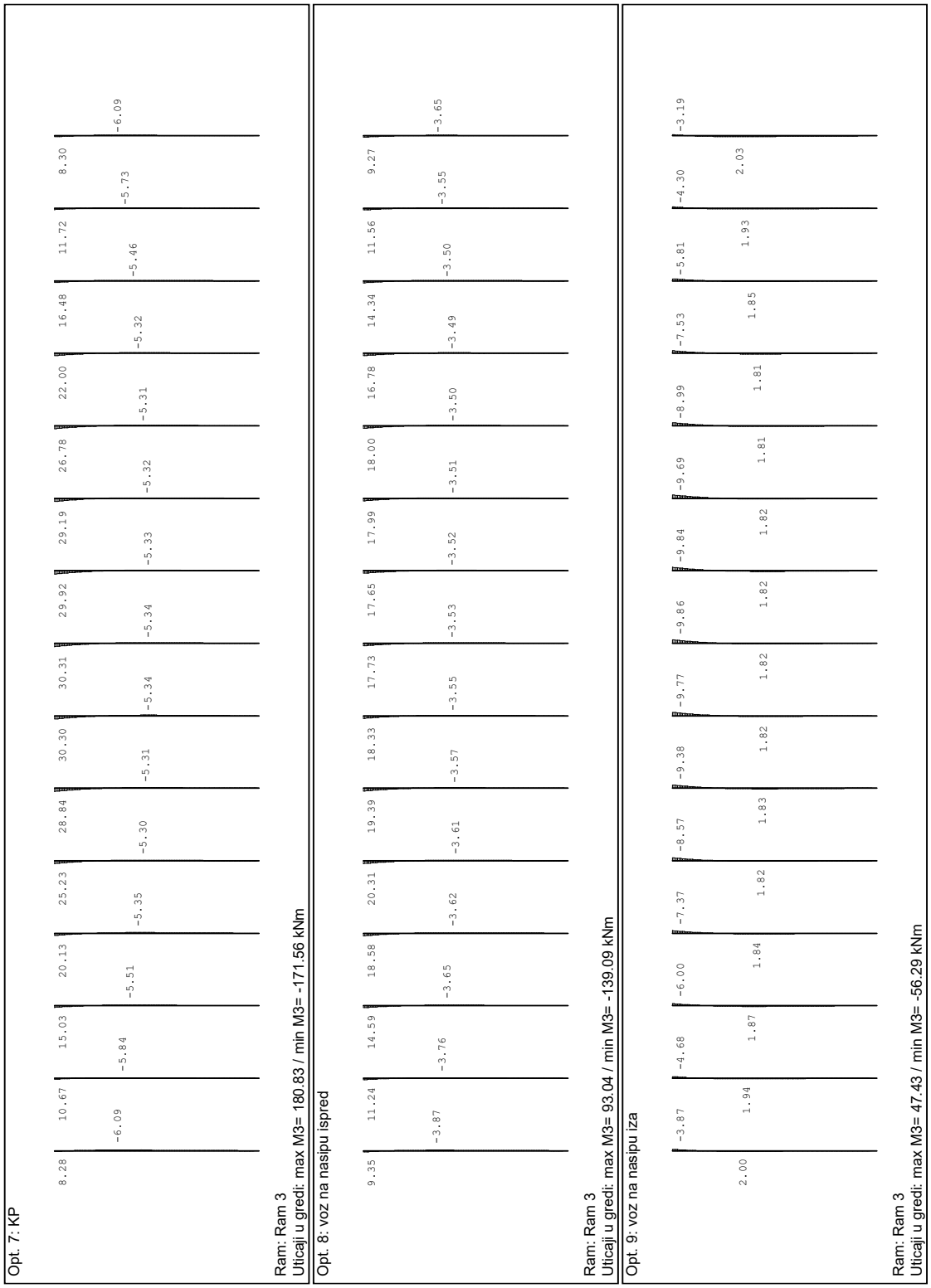

Opt. 19: BU
3.61
3.60
3.72
3.89
4.05
4.19
4.30
4.37
4.38
4.36
4.28
4.14
3.97
3.81
3.74
Ram: Ram 3
Uticaji u gredi: max M2= 4.38 / min M2= -5.47 kNm

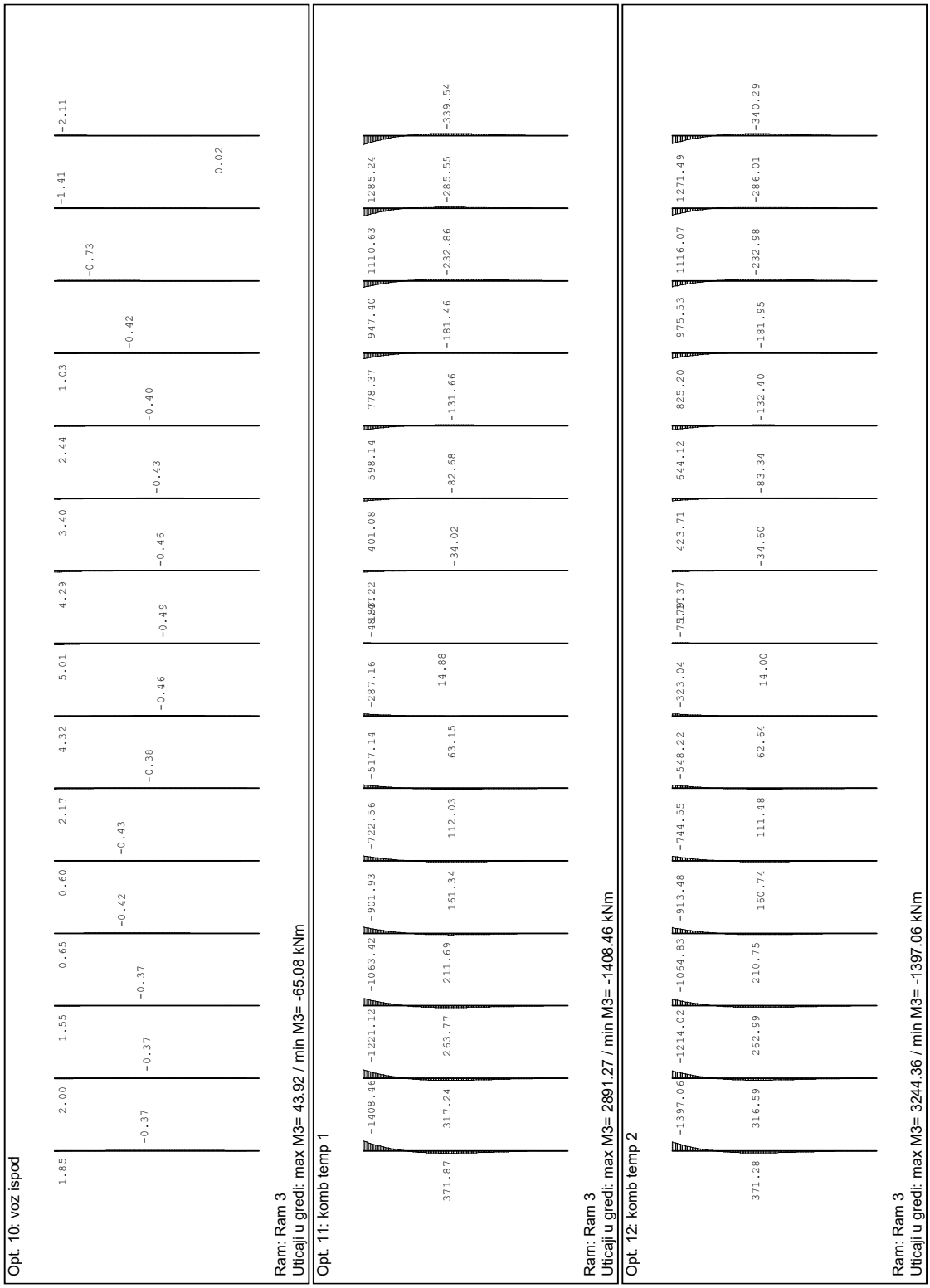

Opt. 20: Sx
102.19
-102.19
100.91
-100.91
100.44
-100.44
100.16
-100.16
99.51
-99.51
98.36
-98.36
97.37
-97.37
96.70
-96.70
96.24
-96.24
95.99
-95.99
96.08
95.97
-96.08
94.99
-95.97
-94.99
94.35
94.98
-94.35
-94.98
Ram: Ram 3
Uticaji u gredi: max M2= 224.26 / min M2= -224.26 kNm

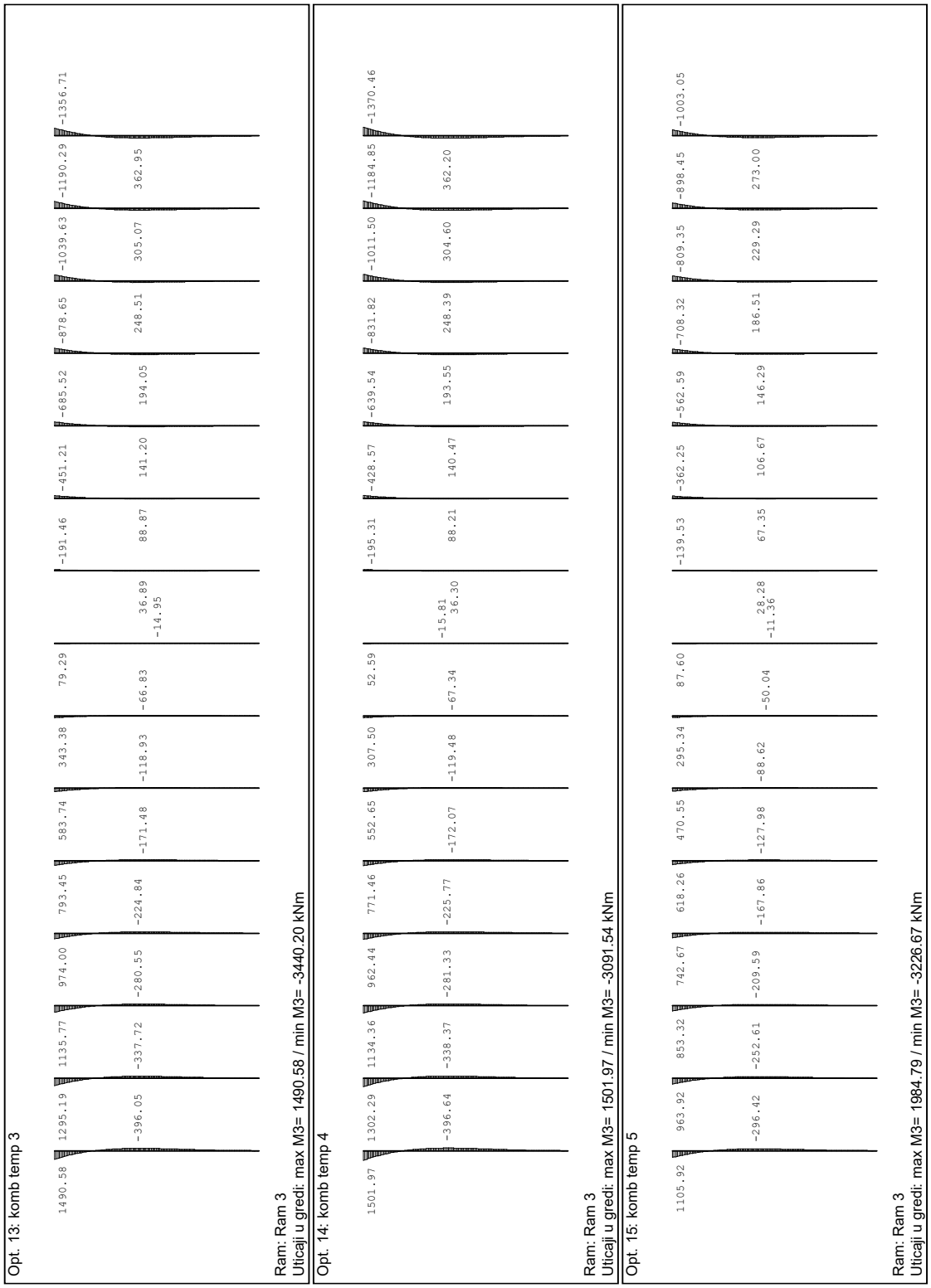

Opt. 21: Sy
1035.12
-1035.12
-1032.55
-1032.75
-1027.89
-1024.12
-1021.06
-1017.91
-1011.10
-1004.04
-994.66
-981.09
-966.75
-949.17
-936.80
-930.80
Ram: Ram 3
Uticaji u gredi: max M2= 1197.83 / min M2= -1197.83 kNm

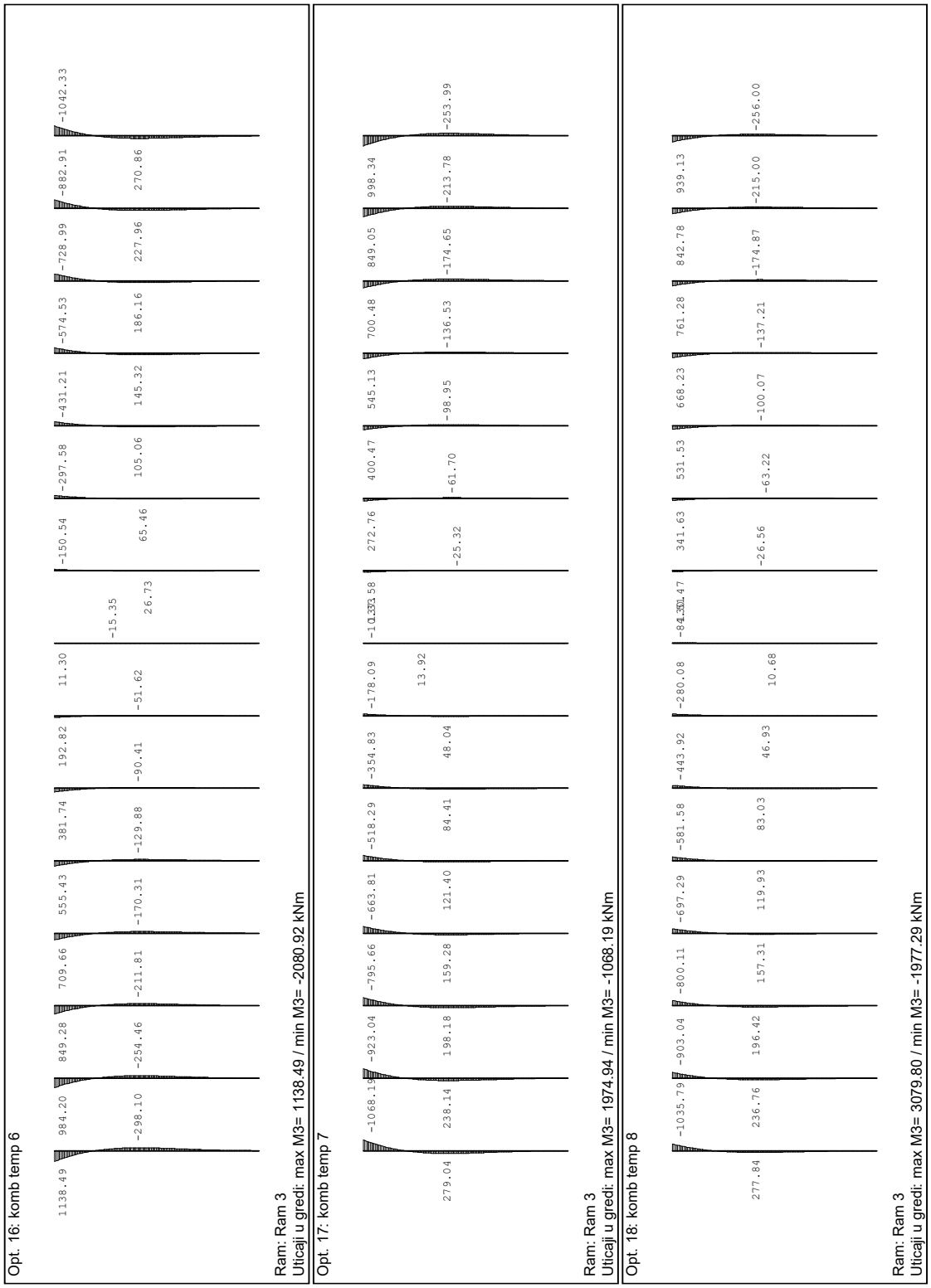

Opt. 1: sopstvena tezina (g)
131.63
110.05
74.39
53.07
52.77
67.36
81.33
67.50
12.88
-70.27
-154.96
-190.86
-170.15
-151.94
-158.73
-7.46
-6.26
-4.27
-3.11
-3.14
-4.03
-4.89
-4.21
-1.35
3.41
8.08
10.03
8.80
7.74
8.10
Ram: Ram 3
Uticaji u gredi: max M3= 2495.80 / min M3= -1043.85 kNm
Opt. 2: mrtav teret (Δg)
41.10
47.41
67.39
97.71
124.72
130.25
103.12
45.81
-25.67
-94.75
-144.59
-157.01
-131.18
-96.39
-76.14
-1.70
-2.06
-3.18
-4.88
-6.43
-6.80
-5.34
-2.20
1.79
5.58
8.31
8.96
7.46
5.47
4.31
Ram: Ram 3
Uticaji u gredi: max M3= 2007.63 / min M3= -1059.96 kNm
Opt. 3: horizontalan pritisak tla
-6.83
-6.81
-5.53
-2.70
-1.22
3.68
2.59
-1.16
-4.69
-5.56
-2.22
3.96
8.48
9.95
9.67
0.41
0.40
0.33
0.16
-0.07
-0.22
-0.18
0.20
0.24
0.06
-0.35
-0.61
-0.69
-0.68
Ram: Ram 3
Uticaji u gredi: max M3= 118.20 / min M3= -176.99 kNm

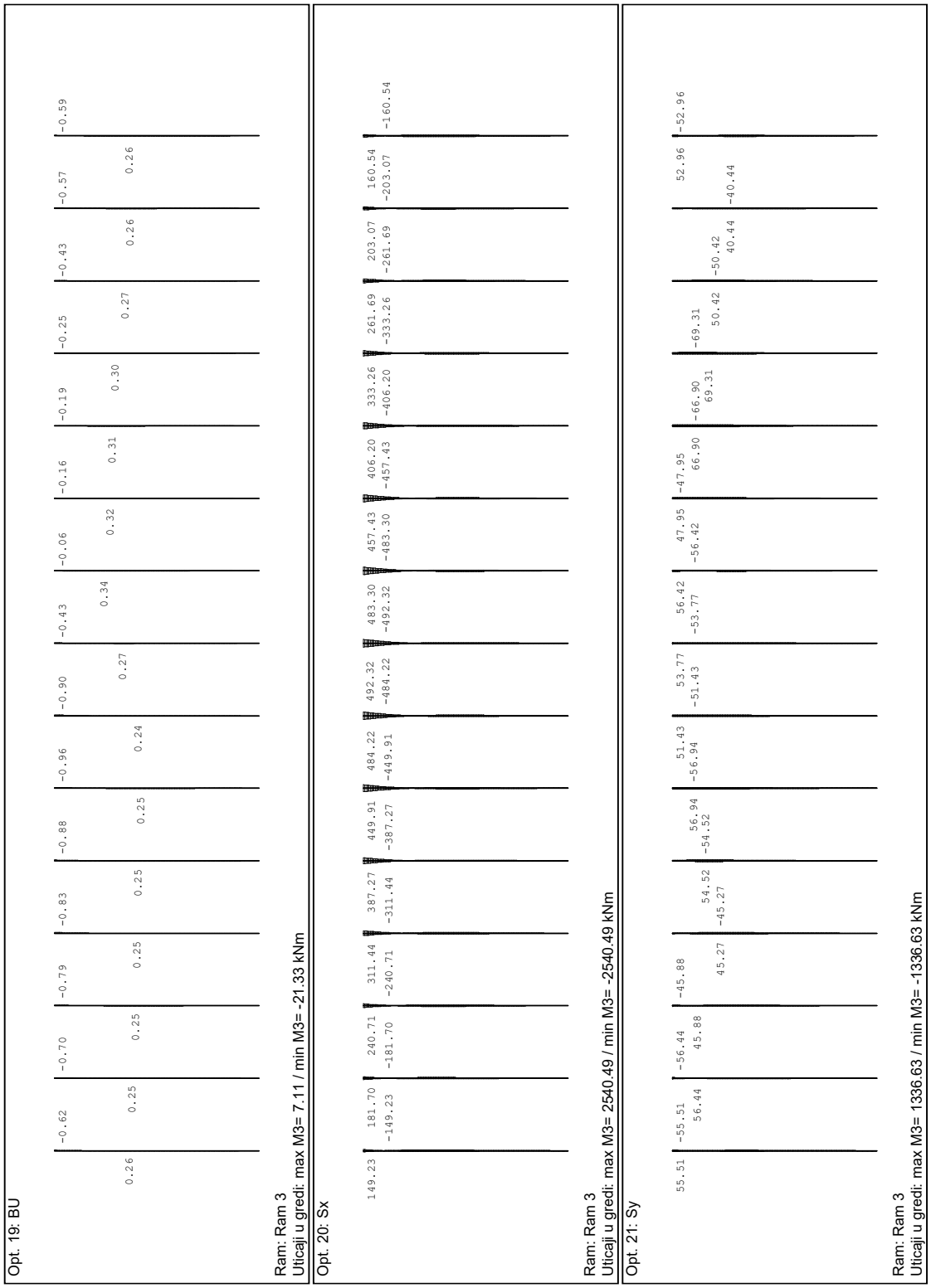

Opt. 4: skupljanje
-1227.2
-1061.4
-910.97
-759.11
-600.09
-428.98
-244.66
-52.23
139.73
325.32
500.27
662.45
816.41
967.69
1123.97
-279.08
-234.46
-191.12
-149.17
-108.30
-67.96
-27.97
11.90
51.82
91.97
132.56
173.79
216.52
260.52
305.77
Ram: Ram 3
Uticaji u gredi: max M3= 1820.51 / min M3= -1227.28 kNm
Opt. 5: LM71
49.92
55.41
-10.29
72.37
-10.40
102.54
-10.58
136.39
-15.67
159.66
-30.79
167.16
-55.45
161.00
-85.97
141.54
-119.15
103.83
-150.06
58.77
-167.73
24.19
-171.11
12.23
-154.15
10.46
-124.15
10.64
-94.61
-77.22
Ram: Ram 3
Uticaji u gredi: max M3= 3346.60 / min M3= -1644.21 kNm
Opt. 6: SW/2
61.95
69.40
-9.27
93.71
-9.81
134.86
-12.29
178.71
-15.10
205.23
-27.06
205.09
-55.32
191.38
-90.42
166.46
-133.24
118.23
-178.48
63.34
-218.31
18.47
-229.41
12.38
-209.44
9.65
-165.34
-122.16
8.31
-98.59
Ram: Ram 3
Uticaji u gredi: max M3= 4046.04 / min M3= -2166.63 kNm


Opt. 7: KP
8.28
10.67
15.03
20.13
25.23
28.84
30.30
30.31
29.92
29.19
26.78
22.00
16.48
11.72
8.30
-6.09
-6.09
-5.84
-5.51
-5.35
-5.30
-5.31
-5.34
-5.34
-5.33
-5.32
-5.32
-5.31
-5.46
-5.73
-6.09
Ram: Ram 3
Uticaji u gredi: max M3= 180.83 / min M3= -171.56 kNm
Opt. 8: voz na nasipu ispred
9.35
11.24
14.59
18.58
20.31
19.39
18.33
17.73
17.65
17.99
18.00
16.78
14.34
11.56
9.27
-3.87
-3.87
-3.76
-3.65
-3.62
-3.61
-3.57
-3.55
-3.53
-3.52
-3.51
-3.50
-3.49
-3.50
-3.55
-3.65
Ram: Ram 3
Uticaji u gredi: max M3= 93.04 / min M3= -139.09 kNm
Opt. 9: voz na nasipu iza
2.00
-3.87
-4.68
-6.00
-7.37
-8.57
-9.38
-9.77
-9.86
-9.84
-9.69
-8.99
-7.53
-5.81
-4.30
-3.19
1.94
1.87
1.84
1.82
1.83
1.82
1.82
1.82
1.82
1.81
1.81
1.85
1.93
2.03
Ram: Ram 3
Uticaji u gredi: max M3= 47.43 / min M3= -56.29 kNm

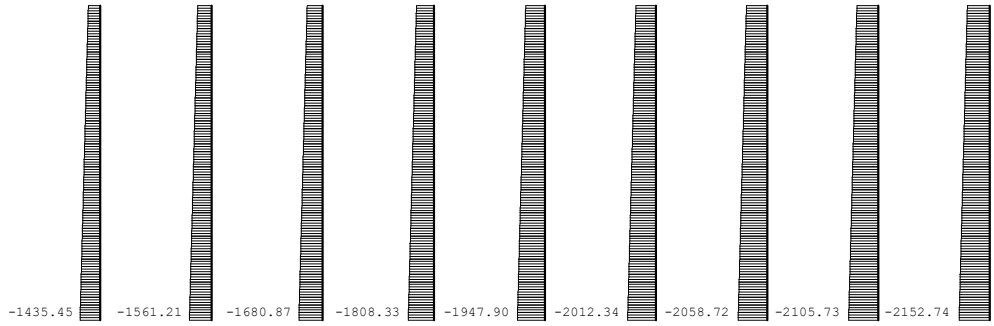

Opt. 10: voz ispod
1.85
2.00
-0.37
1.55
-0.37
0.65
-0.37
0.60
-0.42
2.17
-0.43
4.32
-0.38
5.01
-0.46
4.29
-0.49
3.40
-0.46
2.44
-0.43
1.03
-0.40
-0.42
-0.73
-1.41
-2.11
0.02
Ram: Ram 3
Uticaji u gredi: max M3= 43.92 / min M3= -65.08 kNm
Opt. 11: komb temp 1
-1408.46
371.87
317.24
-1221.12
263.77
-1063.42
211.69
-901.93
161.34
-722.56
112.03
-517.14
63.15
-287.16
14.88
401.08
-34.02
598.14
-82.68
778.37
-131.66
947.40
-181.46
1110.63
-232.86
1285.24
-285.55
-339.54
Ram: Ram 3
Uticaji u gredi: max M3= 2891.27 / min M3= -1408.46 kNm
Opt. 12: komb temp 2
-1397.06
371.28
316.59
-1214.02
262.99
-1064.83
210.75
-913.48
160.74
-744.55
111.48
-548.22
62.64
-323.04
14.00
423.71
-34.60
644.12
-83.34
825.20
-132.40
975.53
-181.95
1116.07
-232.98
1271.49
-286.01
-340.29
Ram: Ram 3
Uticaji u gredi: max M3= 3244.36 / min M3= -1397.06 kNm


Opt. 13: komb temp 3
1490.58
1295.19
-396.05
1135.77
-337.72
974.00
-280.55
793.45
-224.84
583.74
-171.48
343.38
-118.93
79.29
-66.83
-191.46
36.89
-14.95
-451.21
88.87
-685.52
141.20
-878.65
194.05
-1039.63
248.51
-1190.29
305.07
-1356.71
362.95
Ram: Ram 3
Uticaji u gredi: max M3= 1490.58 / min M3= -3440.20 kNm
Opt. 14: komb temp 4
1501.97
1302.29
-396.64
1134.36
-338.37
962.44
-281.33
771.46
-225.77
552.65
-172.07
307.50
-119.48
52.59
-67.34
-195.31
-15.81
36.30
-428.57
88.21
-639.54
140.47
-831.82
193.55
-1011.50
248.39
-1184.85
304.60
-1370.46
362.20
Ram: Ram 3
Uticaji u gredi: max M3= 1501.97 / min M3= -3091.54 kNm
Opt. 15: komb temp 5
1105.92
963.92
-296.42
853.32
-252.61
742.67
-209.59
618.26
-167.86
470.55
-127.98
295.34
-88.62
87.60
-50.04
-139.53
28.28
-11.36
-362.25
67.35
-562.59
106.67
-708.32
146.29
-809.35
186.51
-898.45
229.29
-1003.05
273.00
Ram: Ram 3
Uticaji u gredi: max M3= 1984.79 / min M3= -3226.67 kNm


Opt. 16: komb temp 6
1138.49
984.20
-298.10
849.28
-254.46
709.66
-211.81
555.43
-170.31
381.74
-129.88
192.82
-90.41
11.30
-51.62
-15.35
26.73
-150.54
65.46
-297.58
105.06
-431.21
145.32
-574.53
186.16
-728.99
227.96
-882.91
270.86
-1042.33
Ram: Ram 3
Uticaji u gredi: max M3= 1138.49 / min M3= -2080.92 kNm
Opt. 17: komb temp 7
279.04
-1068.19
238.14
-923.04
198.18
-795.66
159.28
-663.81
121.40
-518.29
84.41
-354.83
48.04
-178.09
13.92
-25.32
272.76
-61.70
400.47
-98.95
545.13
-136.53
700.48
-174.65
849.05
-213.78
998.34
-253.99
Ram: Ram 3
Uticaji u gredi: max M3= 1974.94 / min M3= -1068.19 kNm
Opt. 18: komb temp 8
277.84
-1035.79
236.76
-903.04
196.42
-800.11
157.31
-697.29
119.93
-581.58
83.03
-443.92
46.93
-280.08
10.68
-26.56
341.63
-63.22
531.53
-100.07
668.23
-137.21
761.28
-174.87
842.78
-215.00
939.13
-256.00
Ram: Ram 3
Uticaji u gredi: max M3= 3079.80 / min M3= -1977.29 kNm

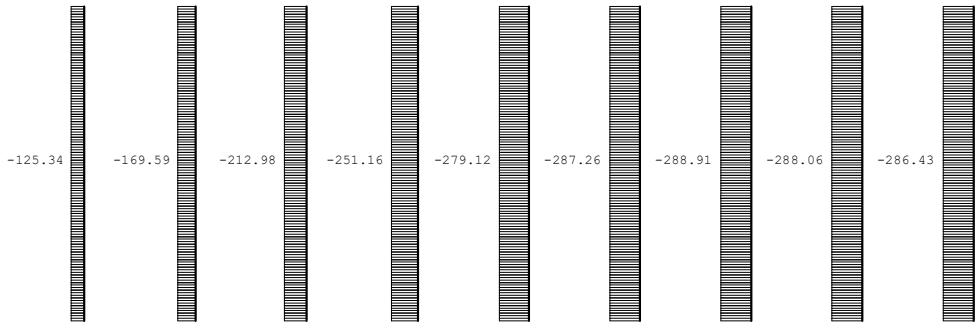

Opt. 19: BU
Ram: Ram 3
Uticaji u gredi: max M3= 7.11 / min M3= -21.33 kNm
Opt. 20: Sx
Ram: Ram 3
Uticaji u gredi: max M3= 2540.49 / min M3= -2540.49 kNm
Opt. 21: Sy
Ram: Ram 3
Uticaji u gredi: max M3= 1336.63 / min M3= -1336.63 kNm

Opt. 1: sopstvena tezina (g)



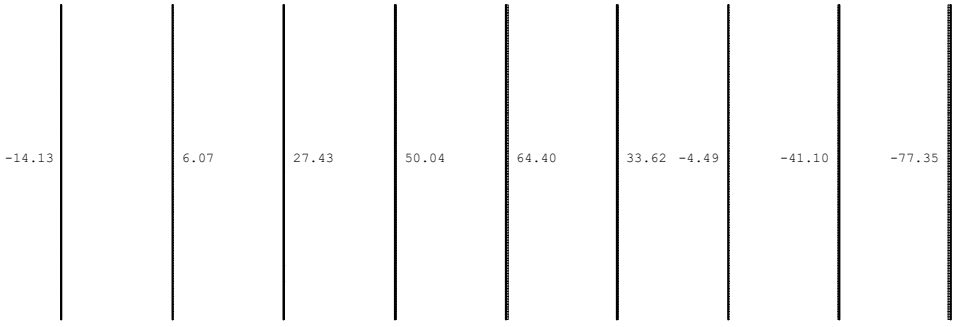
Ram: Ram 4
Uticaji u gredi: max N1= 226.12 / min N1= -2152.74 kN

Opt. 2: mrtav teret (Δg)



Ram: Ram 4
Uticaji u gredi: max N1= 218.74 / min N1= -288.91 kN

Opt. 3: horizontalan pritisak tla

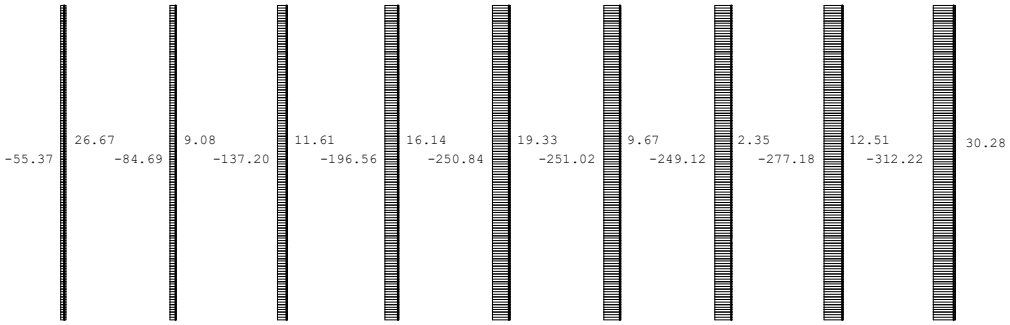


Ram: Ram 4
Uticaji u gredi: max N1= 80.45 / min N1= -972.54 kN

Opt. 4: skupljanje

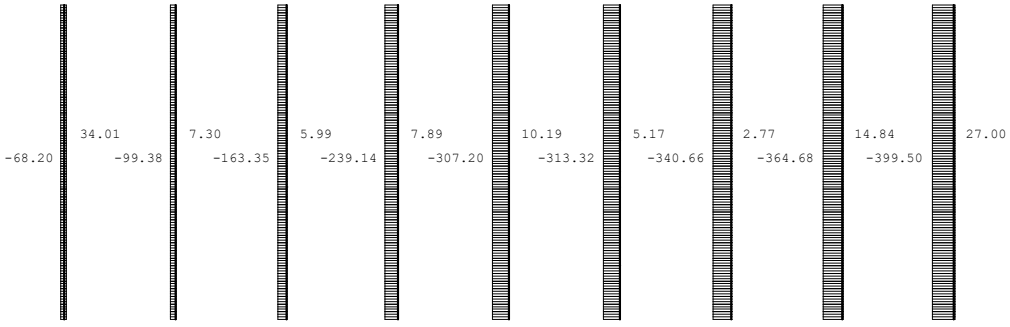
Ram: Ram 4
Uticaji u gredi: max N1= 922.15 / min N1= -166.13 kN

Opt. 5: LM71



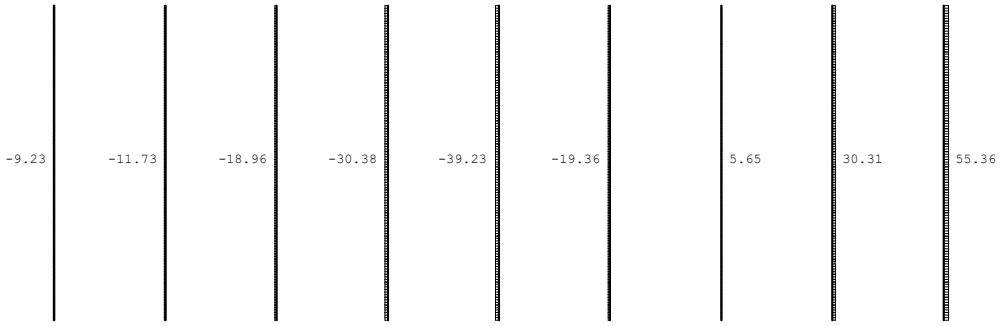
Ram: Ram 4
Uticaji u gredi: max N1= 463.86 / min N1= -312.22 kN

Opt. 6: SW/2



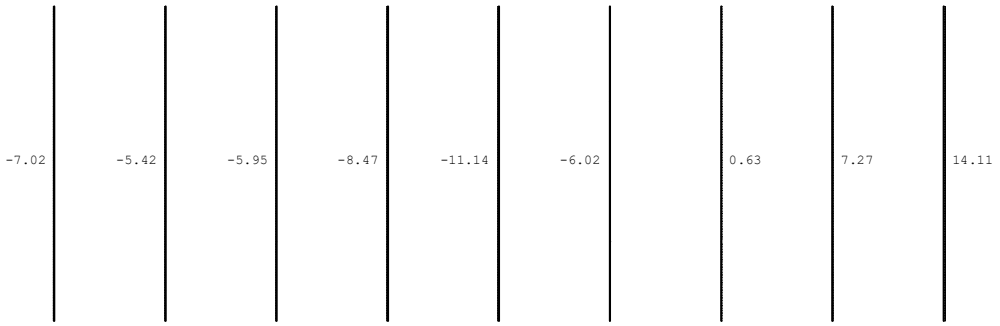
Ram: Ram 4
Uticaji u gredi: max N1= 570.70 / min N1= -399.50 kN

Opt. 7: KP



Ram: Ram 4
Uticaji u gredi: max N1= 202.13 / min N1= -331.21 kN

Opt. 8: voz na nasipu ispred

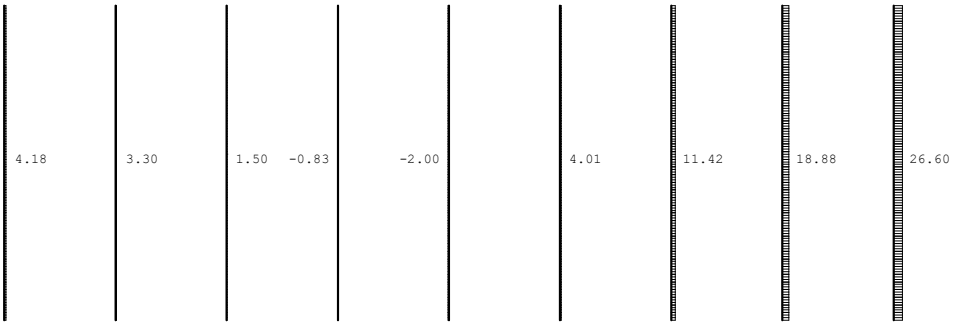


Ram: Ram 4
Uticaji u gredi: max N1= 14.11 / min N1= -237.01 kN

Opt. 9: voz na nasipu iza

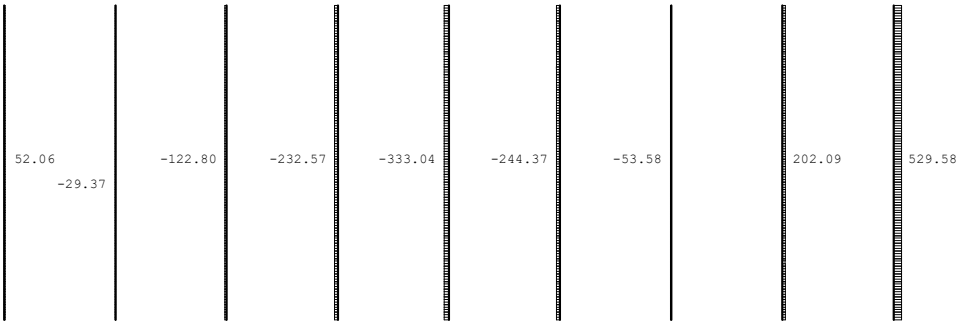
Ram: Ram 4
Uticaji u gredi: max N1= 105.35 / min N1= -107.90 kN

Opt. 10: voz ispod



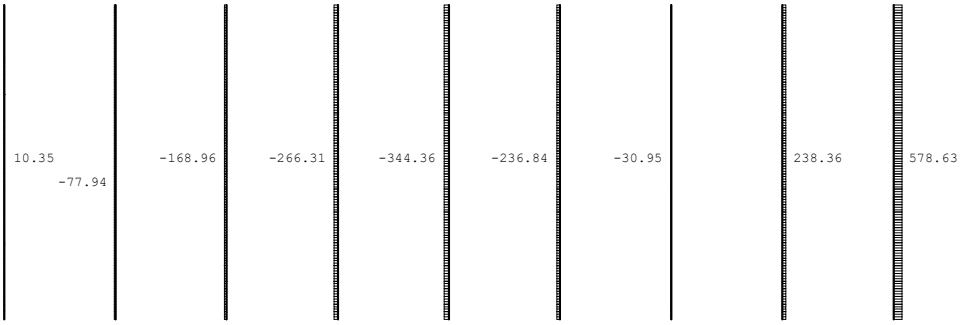
Ram: Ram 4
Uticaji u gredi: max N1= 91.51 / min N1= -57.67 kN

Opt. 11: komb temp 1



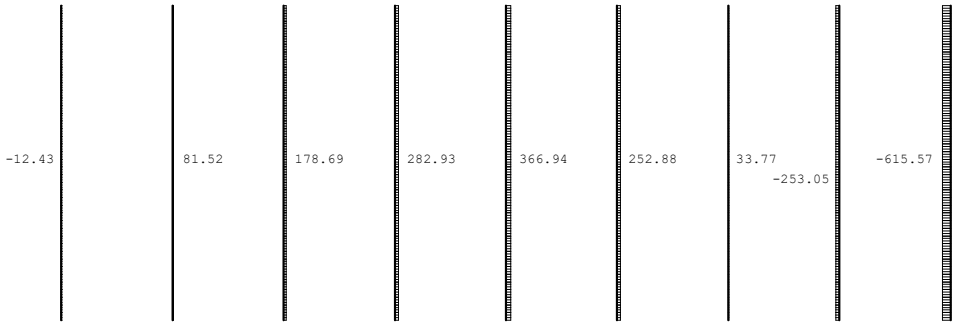
Ram: Ram 4
Uticaji u gredi: max N1= 2071.18 / min N1= -849.11 kN

Opt. 12: komb temp 2



Ram: Ram 4
Uticaji u gredi: max N1= 2129.48 / min N1= -862.20 kN

Opt. 13: komb temp 3

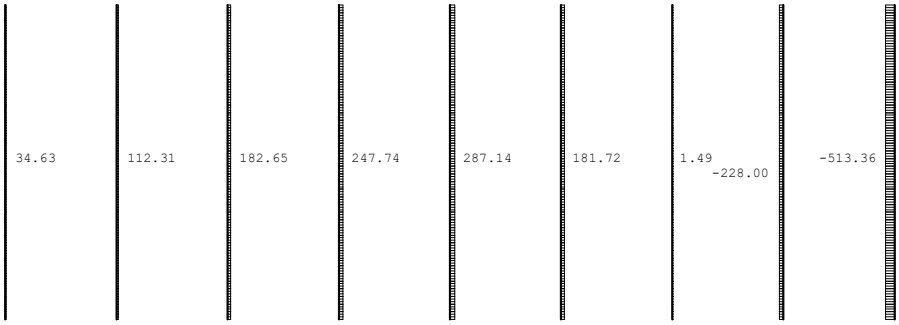


Ram: Ram 4
Uticaji u gredi: max N1= 919.25 / min N1= -2269.50 kN

Opt. 14: komb temp 4

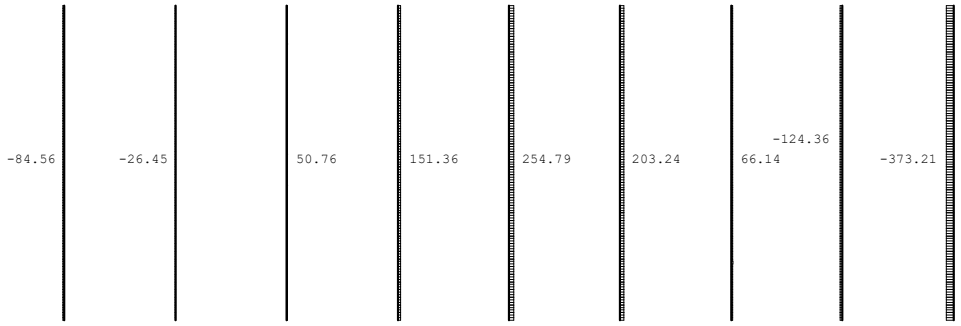
Ram: Ram 4
Uticaji u gredi: max N1= 906.15 / min N1= -2211.20 kN

Opt. 15: komb temp 5



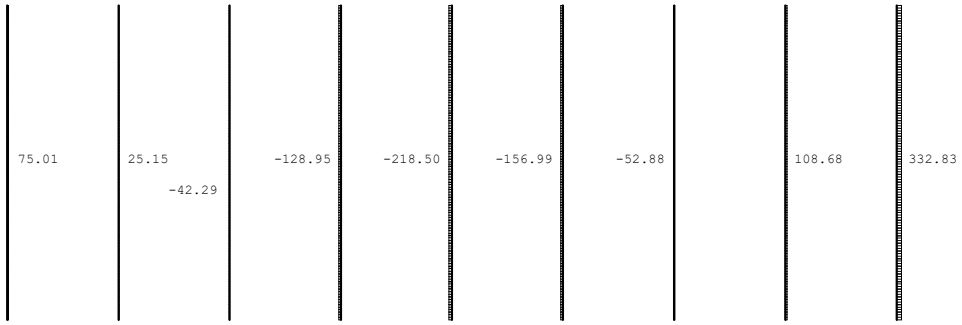
Ram: Ram 4
Uticaji u gredi: max N1= 703.23 / min N1= -1763.55 kN

Opt. 16: komb temp 6



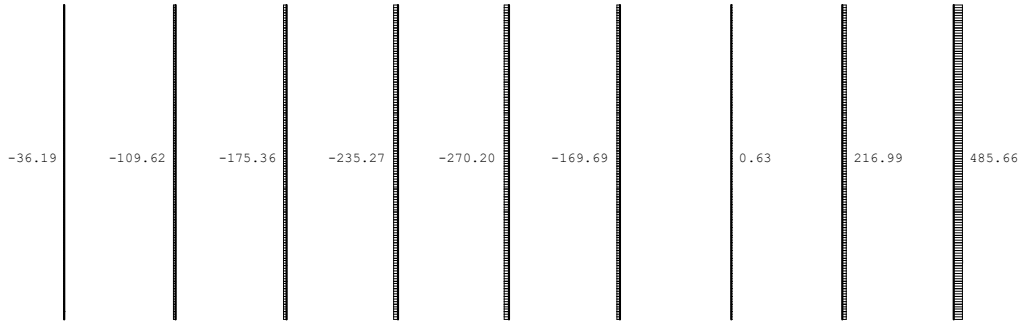
Ram: Ram 4
Uticaji u gredi: max N1= 665.81 / min N1= -1596.98 kN

Opt. 17: komb temp 7



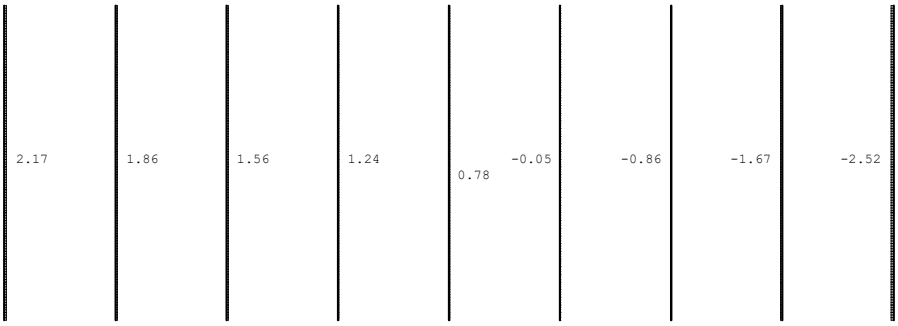
Ram: Ram 4
Uticaji u gredi: max N1= 2088.73 / min N1= -805.71 kN

Opt. 18: komb temp 8



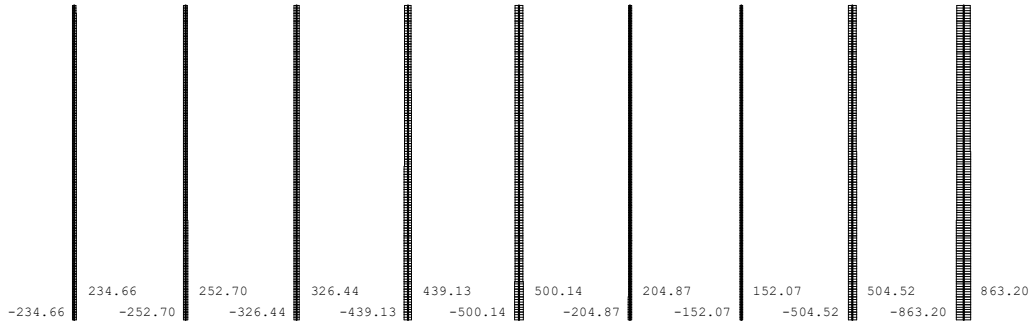
Ram: Ram 4
Uticaji u gredi: max N1= 1658.53 / min N1= -660.45 kN

Opt. 19: BU



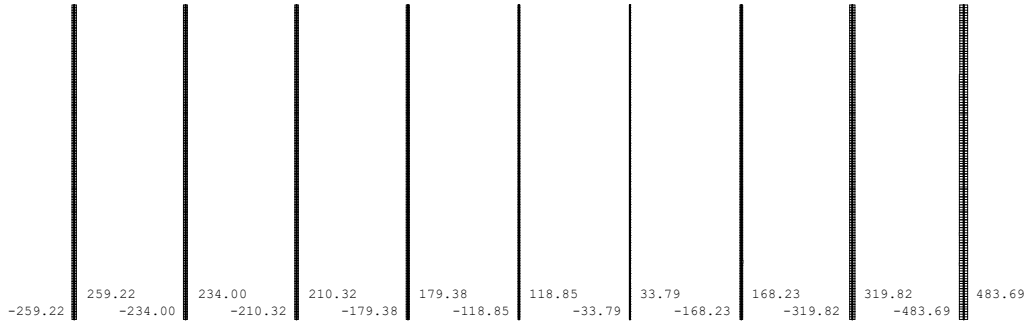
Ram: Ram 4
Uticaji u gredi: max N1= 23.50 / min N1= -30.45 kN

Opt. 20: Sx



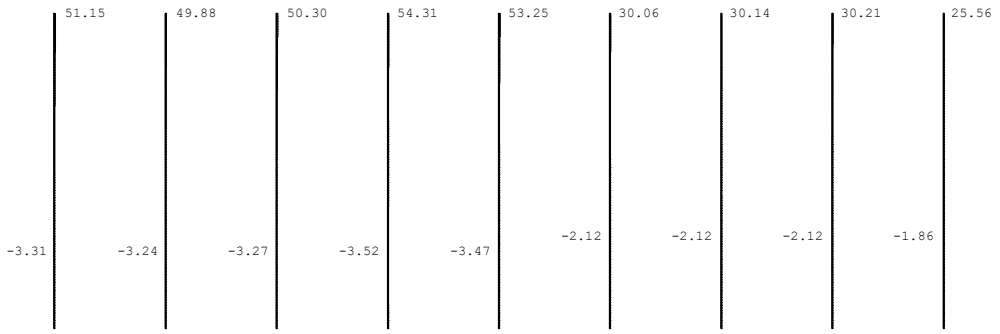
Ram: Ram 4
Uticaji u gredi: max N1= 3646.70 / min N1= -3646.70 kN

Opt. 21: Sy



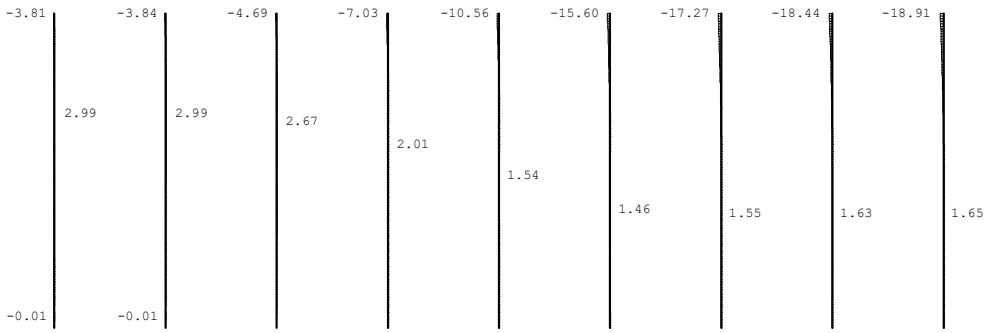
Ram: Ram 4
Uticaji u gredi: max N1= 3591.18 / min N1= -3591.18 kN

Opt. 1: sopstvena tezina (g)



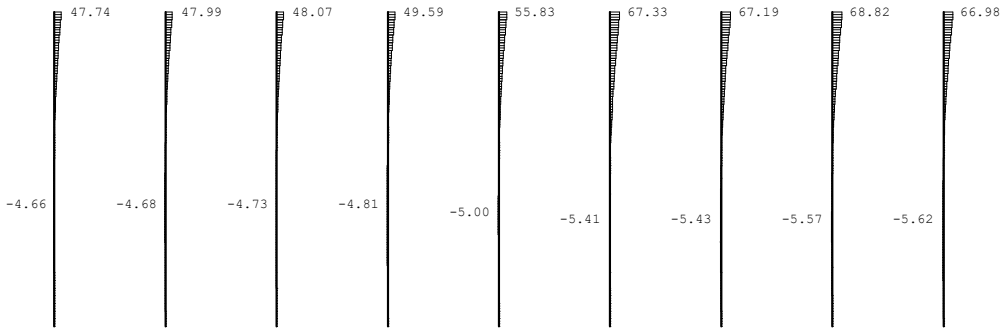
Ram: Ram 4
Uticaji u gredi: max T2= 495.69 / min T2= -1354.41 kN

Opt. 2: mrtav teret (Δg)



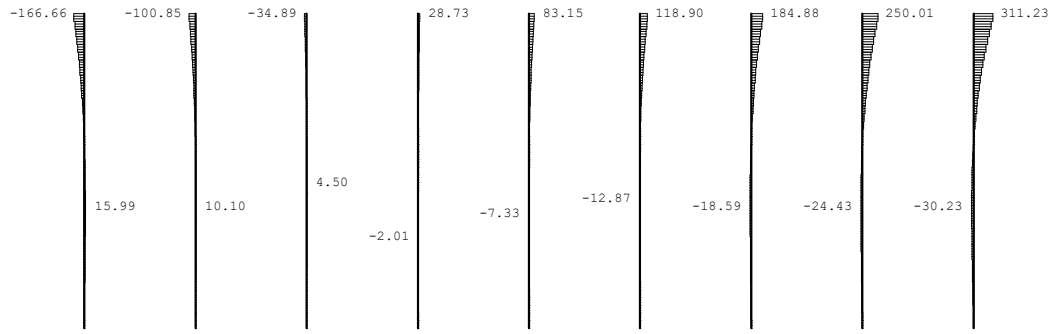
Ram: Ram 4
Uticaji u gredi: max T2= 107.24 / min T2= -182.48 kN

Opt. 3: horizontalan pritisak tla



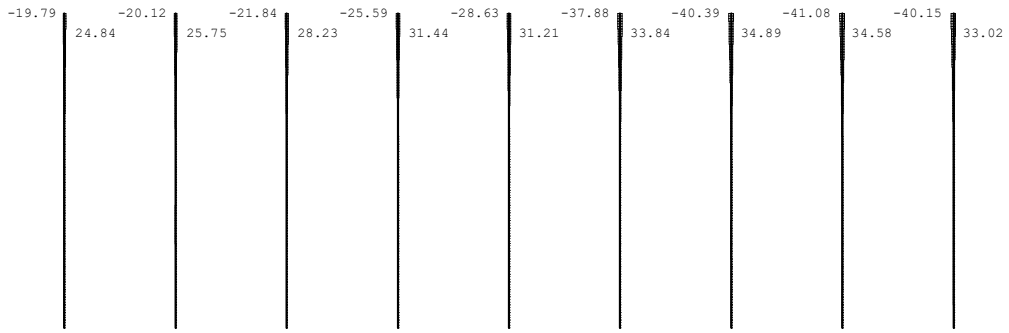
Ram: Ram 4
Uticaji u gredi: max T2= 108.64 / min T2= -217.17 kN

Opt. 4: skupljanje



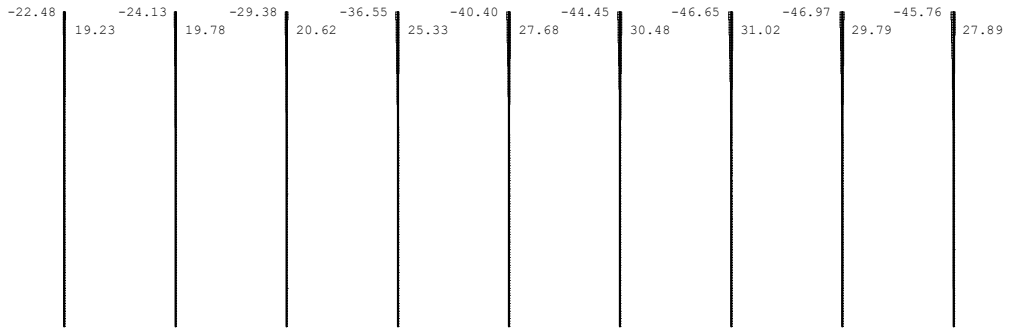
Ram: Ram 4
Uticaji u gredi: max T2= 427.73 / min T2= -488.32 kN

Opt. 5: LM71



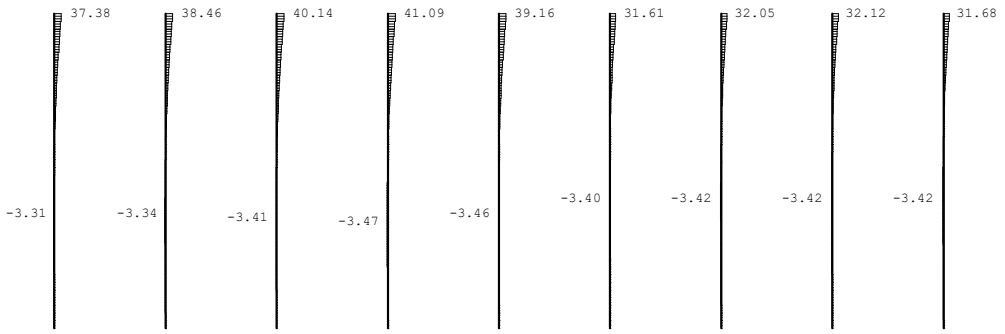
Ram: Ram 4
Uticaji u gredi: max T2= 299.53 / min T2= -498.53 kN

Opt. 6: SW/2



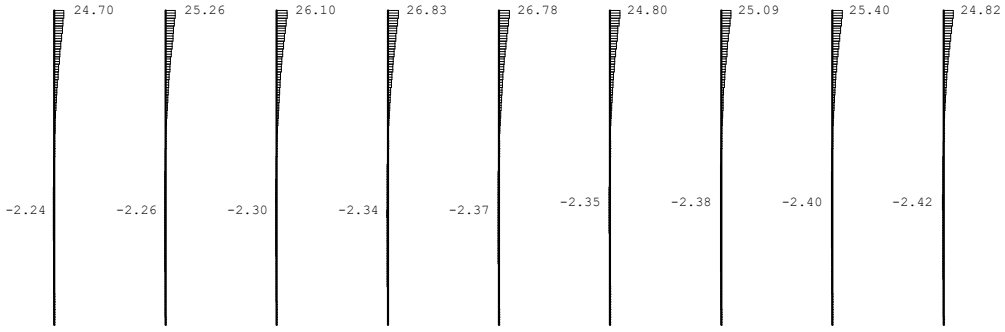
Ram: Ram 4
Uticaji u gredi: max T2= 326.86 / min T2= -612.98 kN

Opt. 7: KP



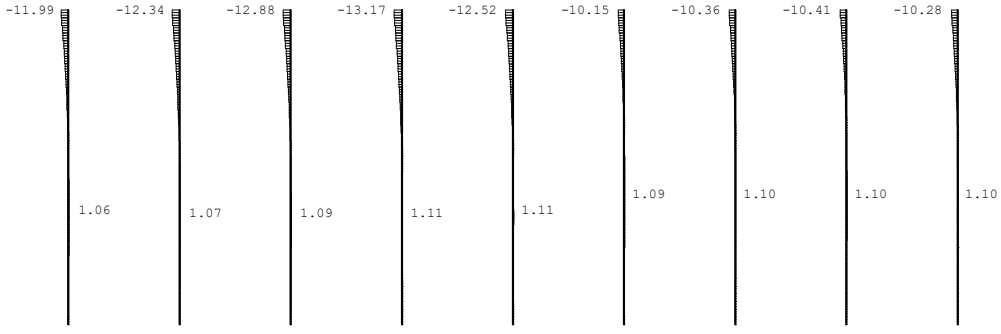
Ram: Ram 4
Uticaji u gredi: max T2= 109.81 / min T2= -169.35 kN

Opt. 8: voz na nasipu ispred



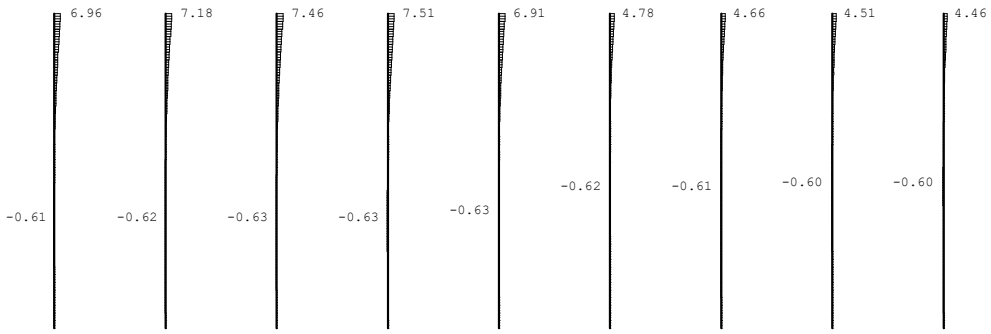
Ram: Ram 4
Uticaji u gredi: max T2= 26.96 / min T2= -78.08 kN

Opt. 9: voz na nasipu iza



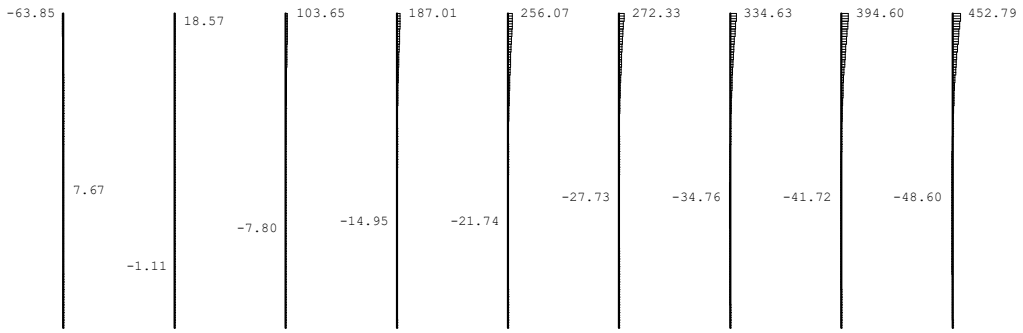
Ram: Ram 4
Uticaji u gredi: max T2= 51.37 / min T2= -35.12 kN

Opt. 10: voz ispod



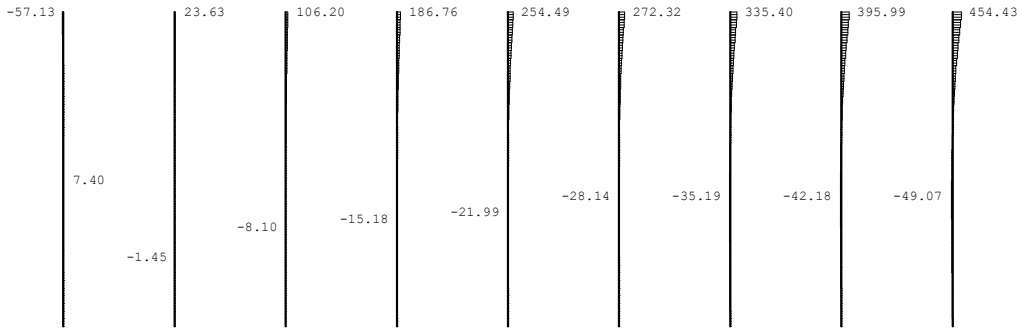
Ram: Ram 4
Uticaji u gredi: max T2= 35.45 / min T2= -27.85 kN

Opt. 11: komb temp 1



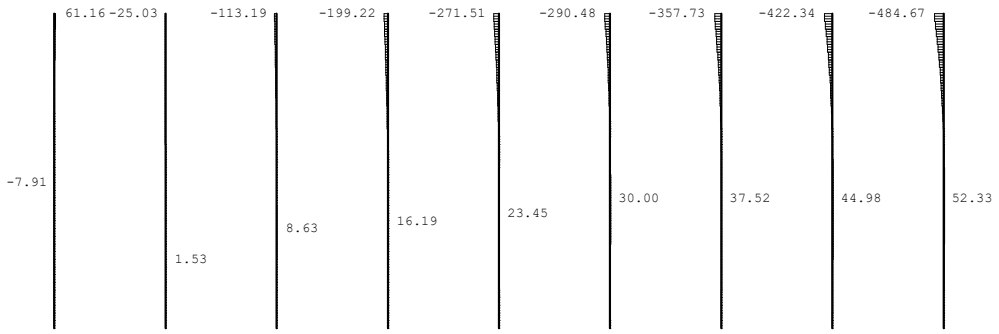
Ram: Ram 4
Uticaji u gredi: max T2= 540.94 / min T2= -1707.16 kN

Opt. 12: komb temp 2



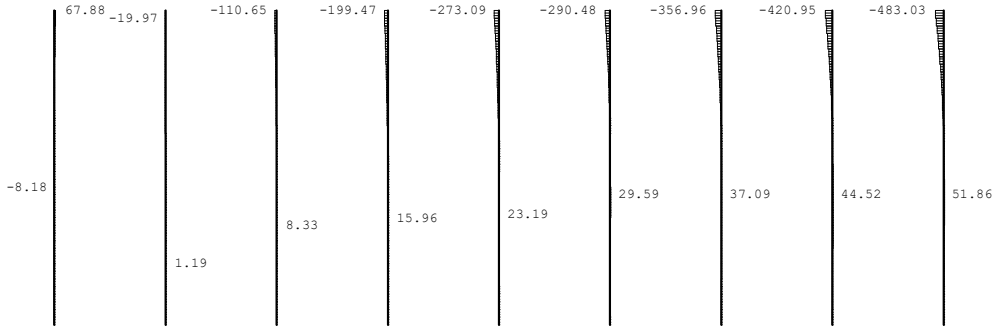
Ram: Ram 4
Uticaji u gredi: max T2= 550.95 / min T2= -1533.41 kN

Opt. 13: komb temp 3



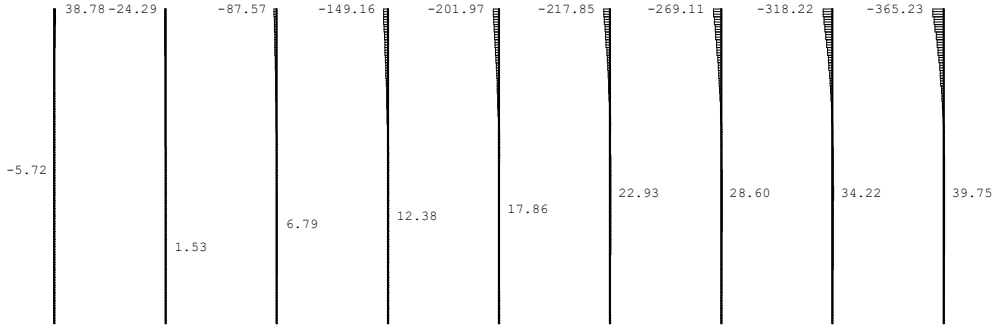
Ram: Ram 4
Uticaji u gredi: max T2= 1641.43 / min T2= -587.34 kN

Opt. 14: komb temp 4



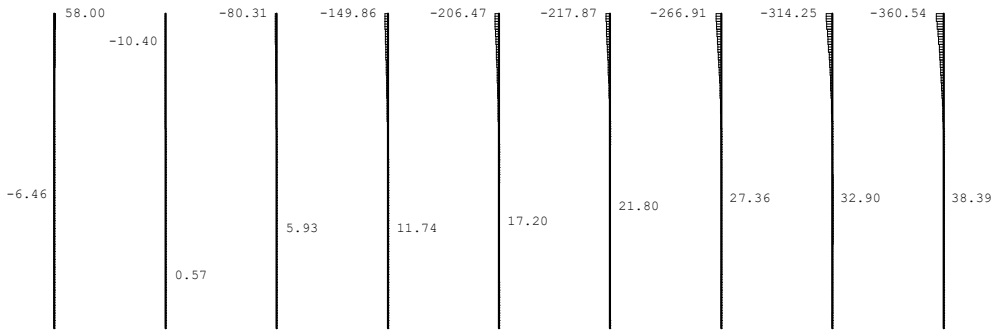
Ram: Ram 4
Uticaji u gredi: max T2= 1815.18 / min T2= -577.33 kN

Opt. 15: komb temp 5



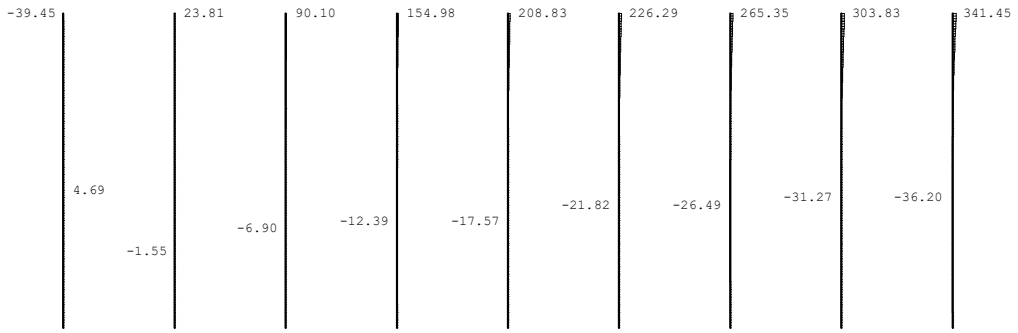
Ram: Ram 4
Uticaji u gredi: max T2= 1048.02 / min T2= -451.05 kN

Opt. 16: komb temp 6



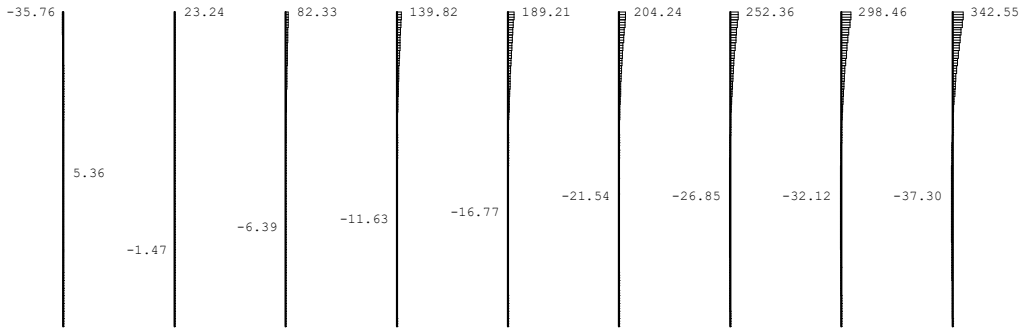
Ram: Ram 4
Uticaji u gredi: max T2= 1544.44 / min T2= -422.45 kN

Opt. 17: komb temp 7



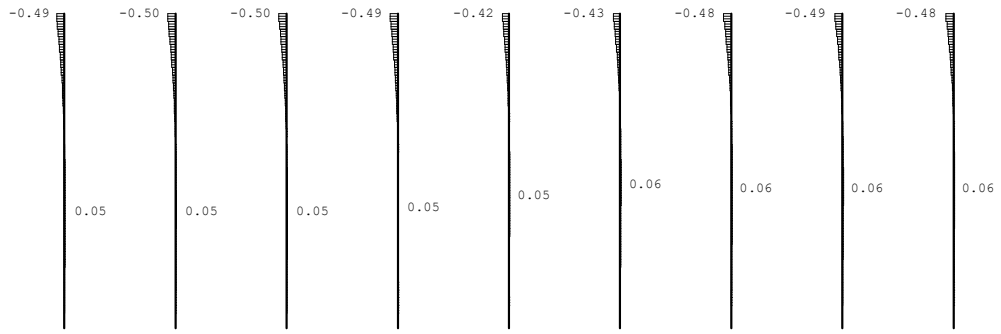
Ram: Ram 4
Uticaji u gredi: max T2= 2991.73 / min T2= -2020.03 kN

Opt. 18: komb temp 8



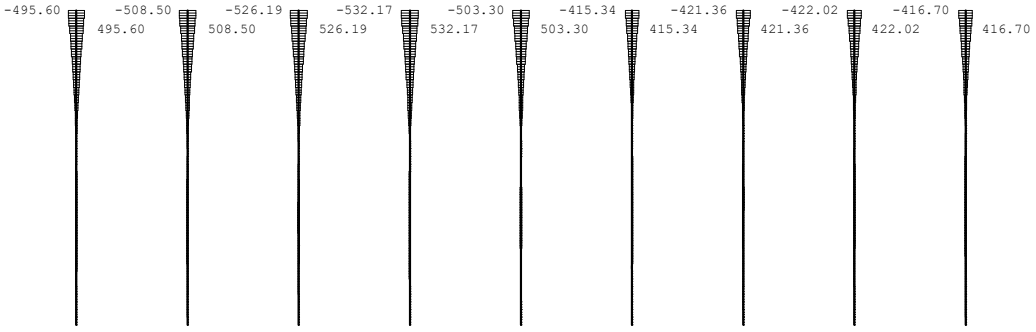
Ram: Ram 4
Uticaji u gredi: max T2= 423.76 / min T2= -967.01 kN

Opt. 19: BU



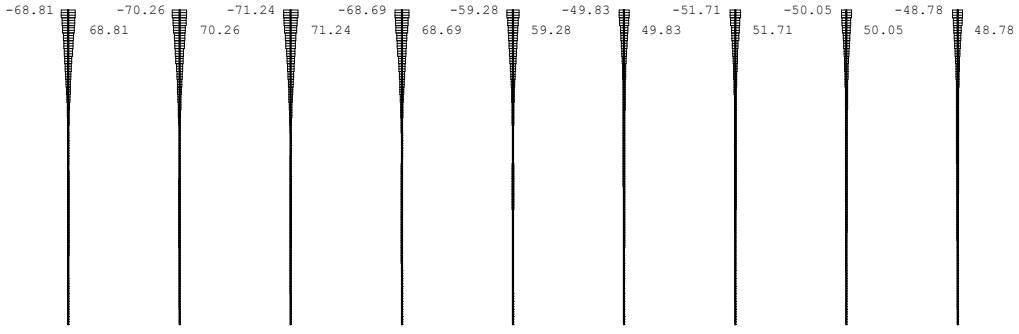
Ram: Ram 4
Uticaji u gredi: max T2= 1.94 / min T2= -0.50 kN

Opt. 20: Sx



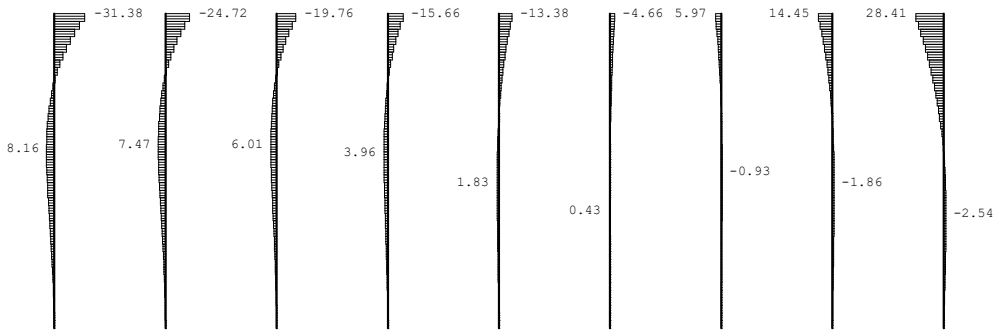
Ram: Ram 4
Uticaji u gredi: max T2= 1874.06 / min T2= -1874.06 kN

Opt. 21: Sy



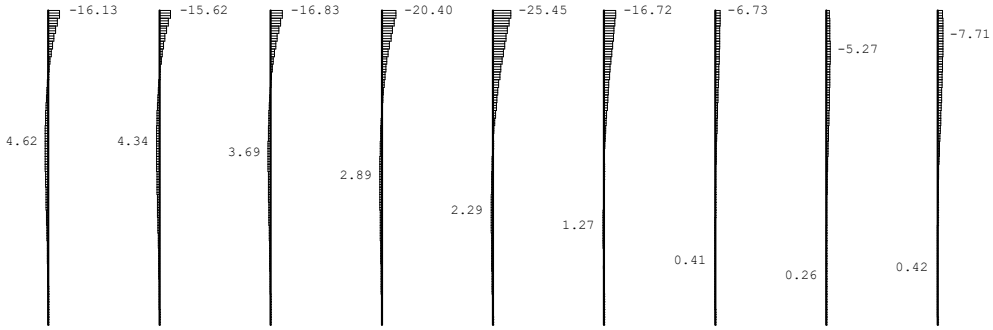
Ram: Ram 4
Uticaji u gredi: max T2= 298.97 / min T2= -298.97 kN

Opt. 1: sopstvena tezina (g)



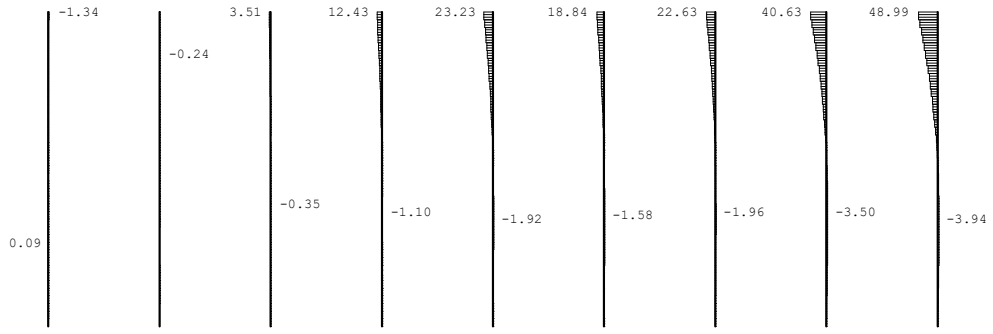
Ram: Ram 4
Uticaji u gredi: max T3= 28.41 / min T3= -31.38 kN

Opt. 2: mrtav teret (Δg)



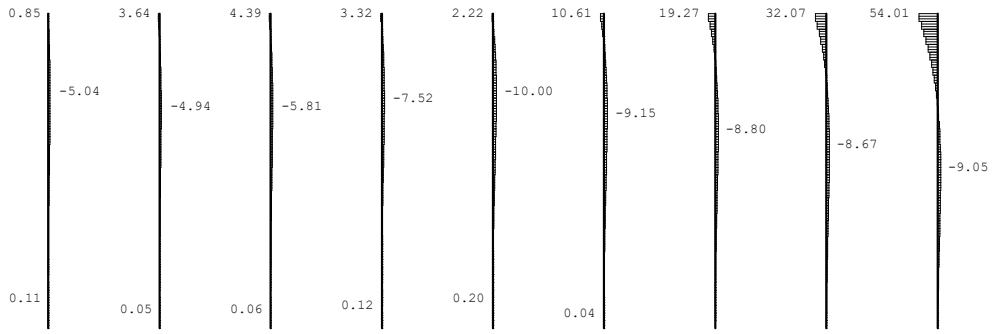
Ram: Ram 4
Uticaji u gredi: max T3= 43.75 / min T3= -37.24 kN

Opt. 3: horizontalan pritisak tla



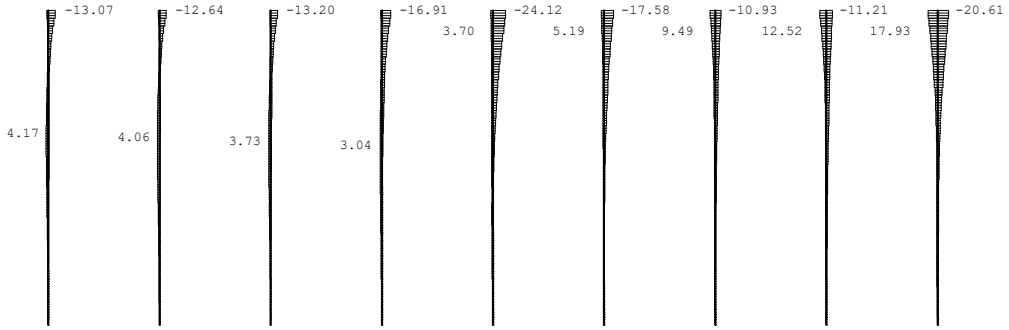
Ram: Ram 4
Uticaji u gredi: max T3= 57.02 / min T3= -78.77 kN

Opt. 4: skupljanje



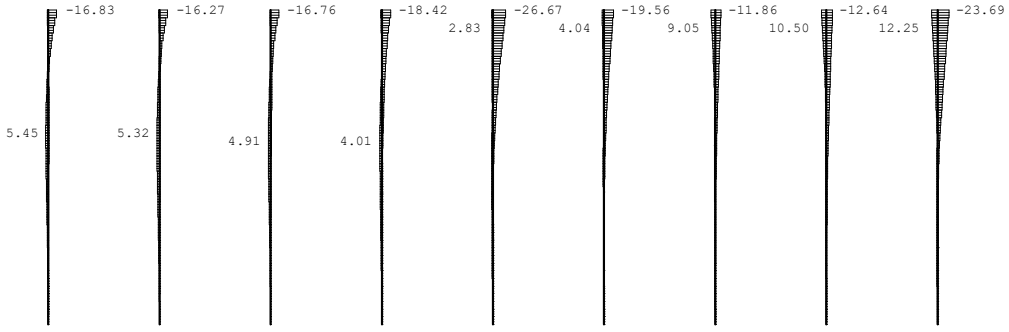
Ram: Ram 4
Uticaji u gredi: max T3= 87.80 / min T3= -25.57 kN

Opt. 5: LM71



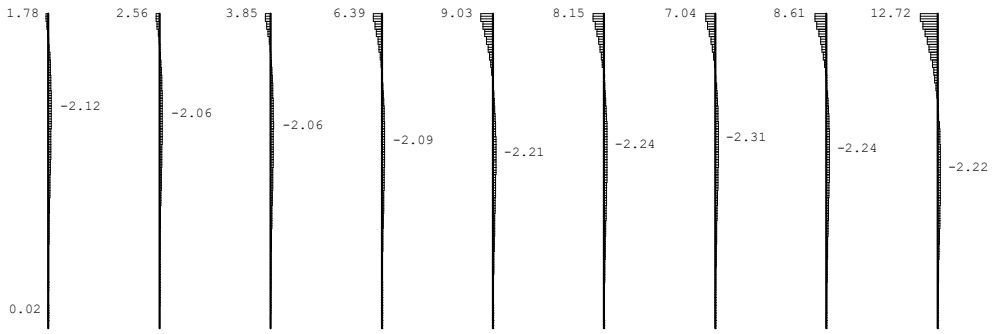
Ram: Ram 4
Uticaji u gredi: max T3= 57.50 / min T3= -38.21 kN

Opt. 6: SW/2



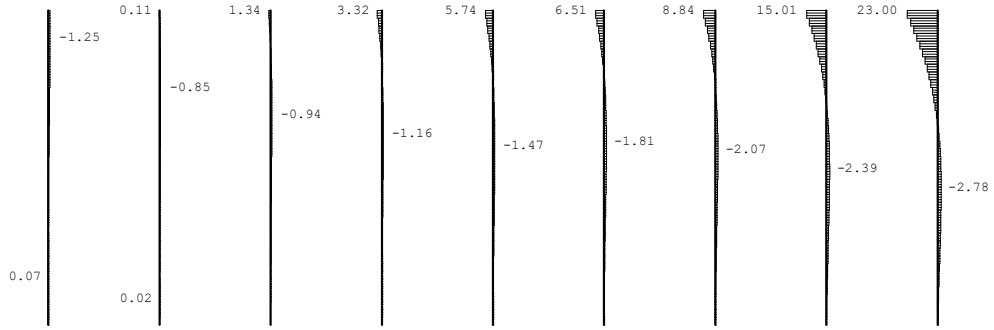
Ram: Ram 4
Uticaji u gredi: max T3= 63.90 / min T3= -46.00 kN

Opt. 7: KP



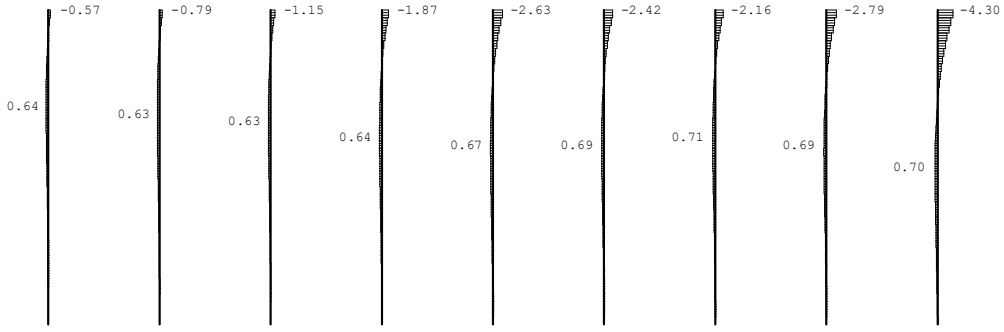
Ram: Ram 4
Uticaji u gredi: max T3= 20.42 / min T3= -22.70 kN

Opt. 8: voz na nasipu ispred



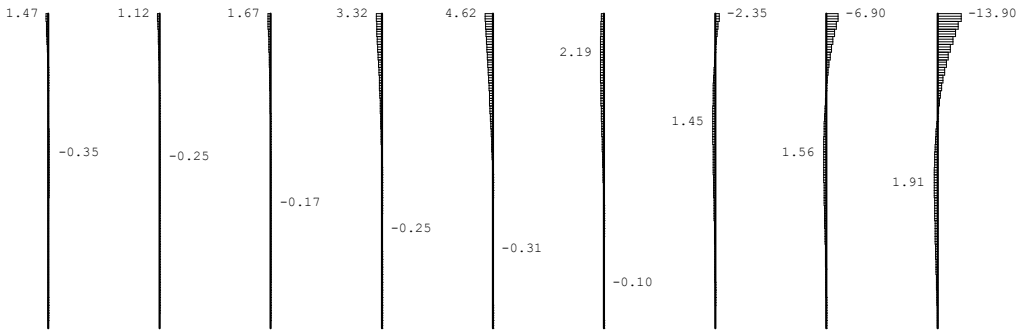
Ram: Ram 4
Uticaji u gredi: max T3= 23.00 / min T3= -17.94 kN

Opt. 9: voz na nasipu iza



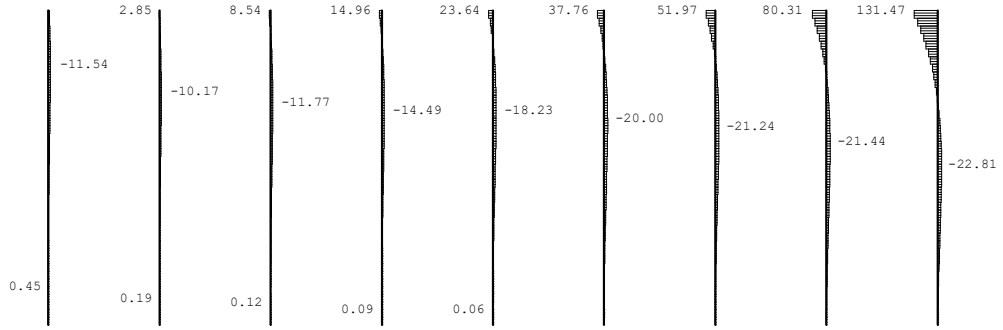
Ram: Ram 4
Uticaji u gredi: max T3= 6.41 / min T3= -8.46 kN

Opt. 10: voz ispod



Ram: Ram 4
Uticaji u gredi: max T3= 12.18 / min T3= -18.01 kN

Opt. 11: komb temp 1

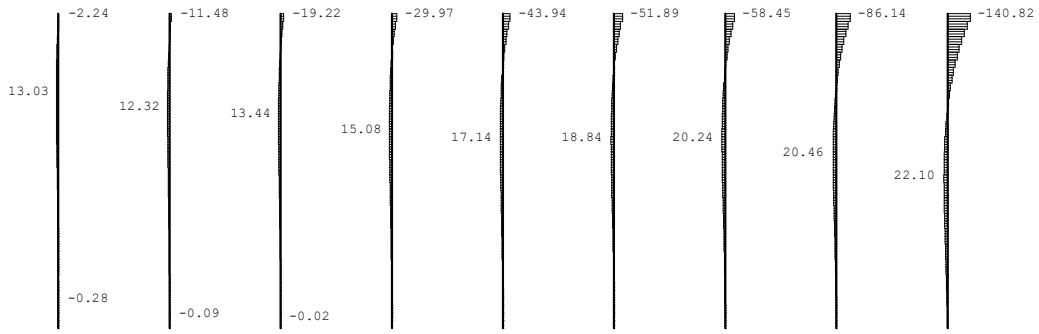


Ram: Ram 4
Uticaji u gredi: max T3= 172.68 / min T3= -69.00 kN

Opt. 12: komb temp 2

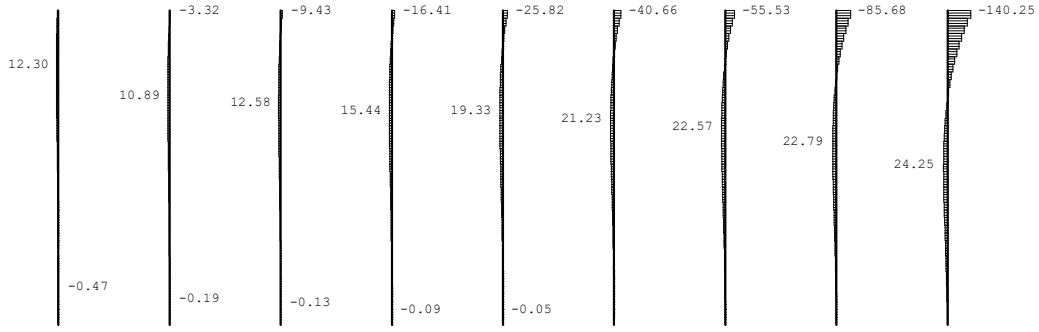
Ram: Ram 4
Uticaji u gredi: max T3= 178.05 / min T3= -80.31 kN

Opt. 13: komb temp 3



Ram: Ram 4
Uticaji u gredi: max T3= 85.28 / min T3= -189.74 kN

Opt. 14: komb temp 4

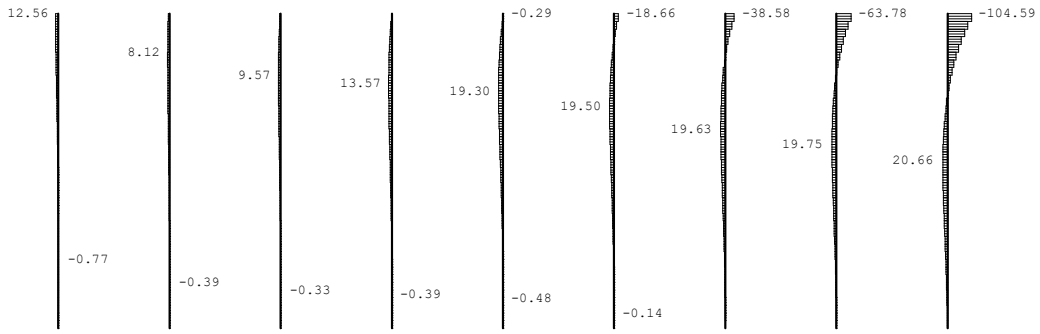


Ram: Ram 4
Uticaji u gredi: max T3= 73.98 / min T3= -184.38 kN

Opt. 15: komb temp 5

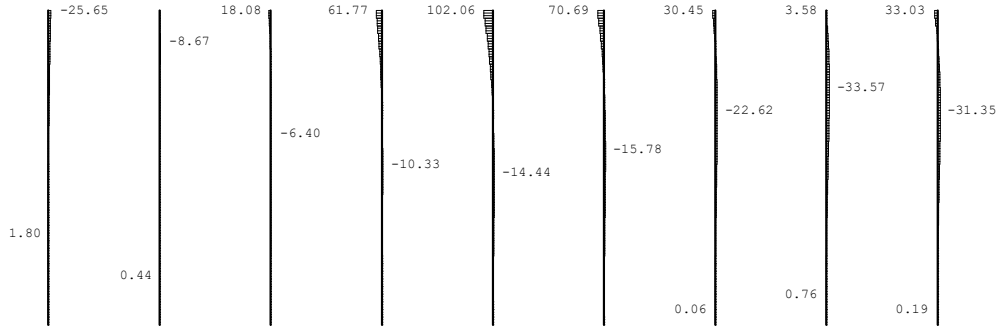
Ram: Ram 4
Uticaji u gredi: max T3= 94.94 / min T3= -147.96 kN

Opt. 16: komb temp 6



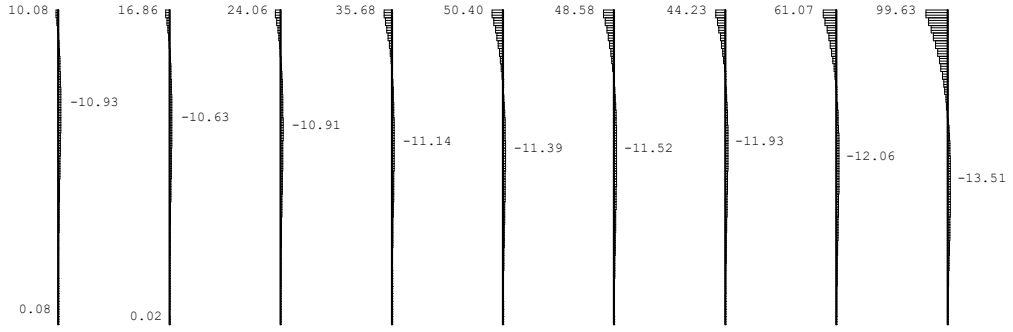
Ram: Ram 4
Uticaji u gredi: max T3= 46.59 / min T3= -132.63 kN

Opt. 17: komb temp 7



Ram: Ram 4
Uticaji u gredi: max T3= 171.78 / min T3= -343.49 kN

Opt. 18: komb temp 8

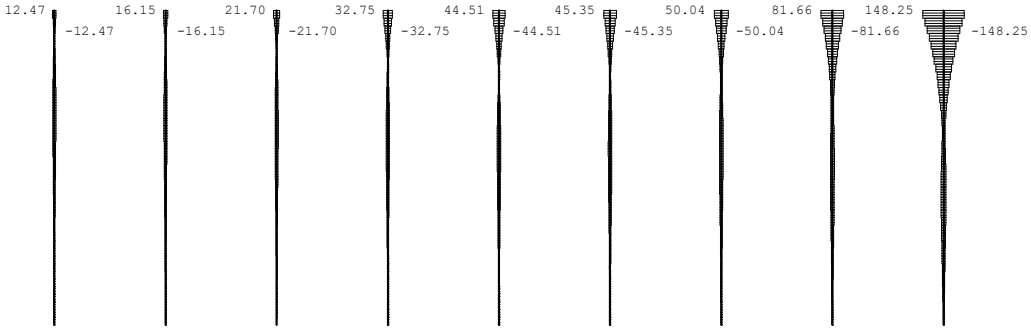


Ram: Ram 4
Uticaji u gredi: max T3= 139.19 / min T3= -92.63 kN

Opt. 19: BU

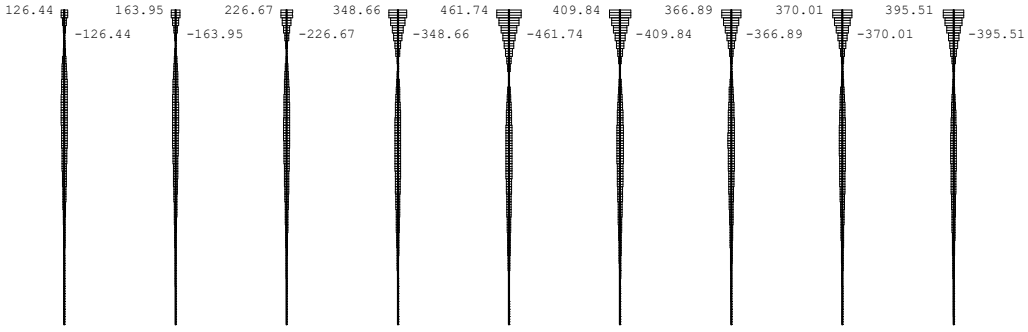
Ram: Ram 4
Uticaji u gredi: max T3= 2.79 / min T3= -6.81 kN

Opt. 20: Sx



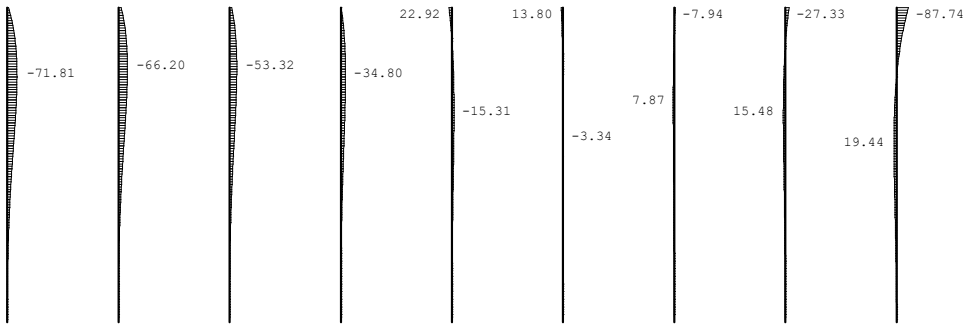
Ram: Ram 4
Uticaji u gredi: max T3= 219.17 / min T3= -219.17 kN

Opt. 21: Sy



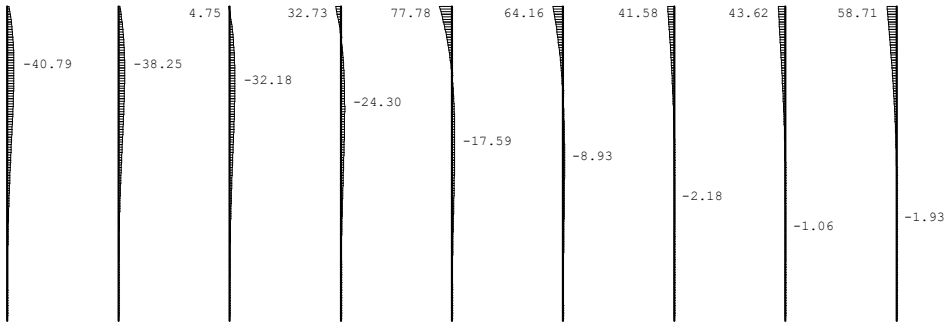
Ram: Ram 4
Uticaji u gredi: max T3= 1172.06 / min T3= -1172.06 kN

Opt. 1: sopstvena tezina (g)



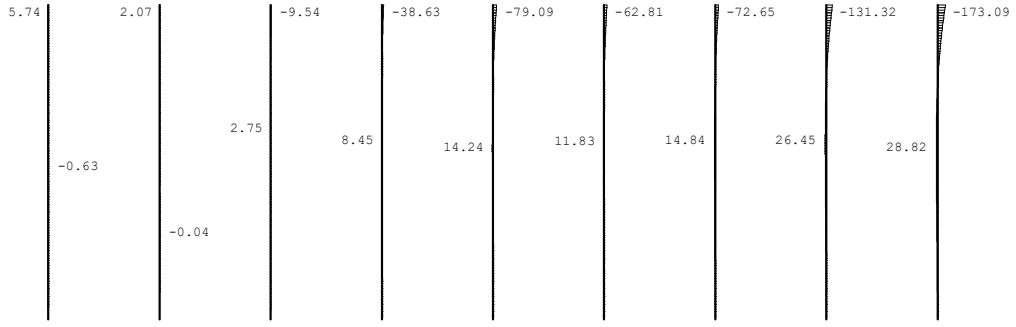
Ram: Ram 4
Uticaji u gredi: max M2= 226.69 / min M2= -87.74 kNm

Opt. 2: mrtav teret (Δg)



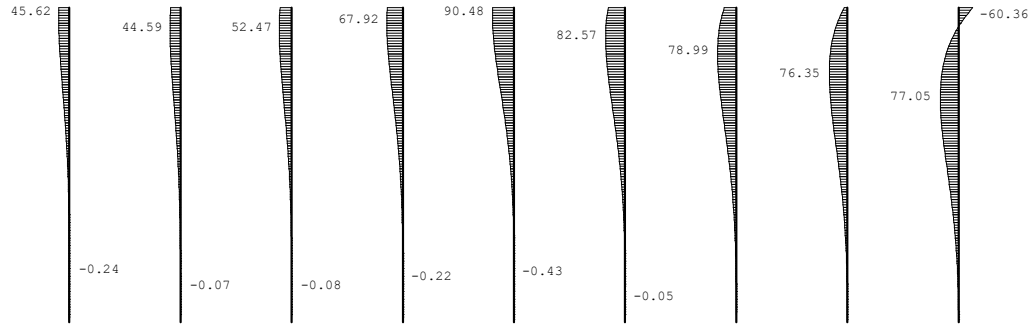
Ram: Ram 4
Uticaji u gredi: max M2= 190.17 / min M2= -99.91 kNm

Opt. 3: horizontalan pritisak tla



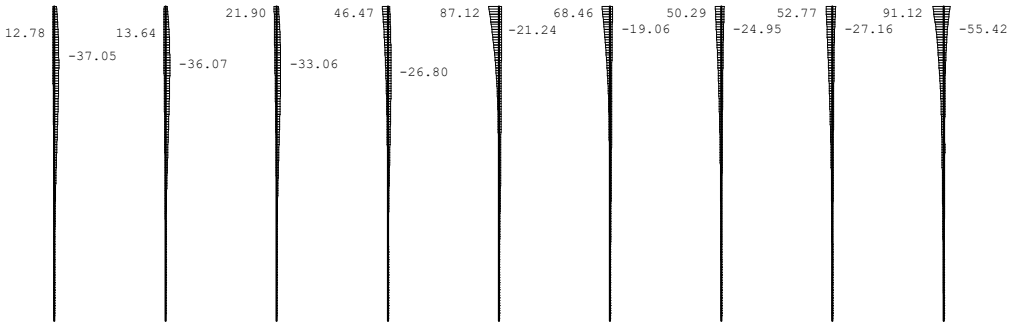
Ram: Ram 4
Uticaji u gredi: max M2= 154.56 / min M2= -662.45 kNm

Opt. 4: skupljanje



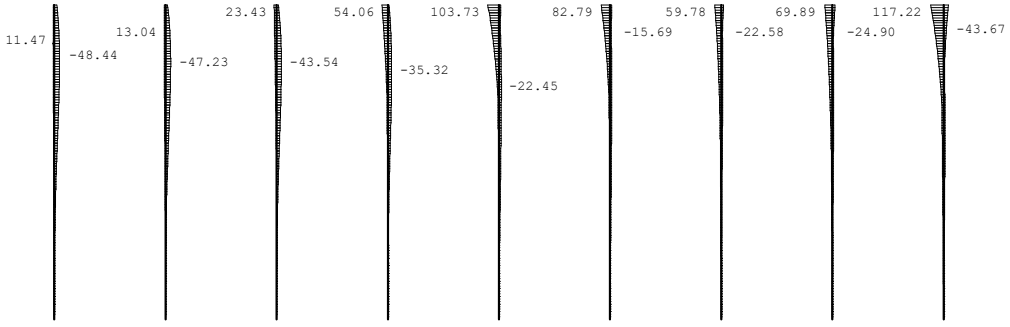
Ram: Ram 4
Uticaji u gredi: max M2= 128.70 / min M2= -88.31 kNm

Opt. 5: LM71



Ram: Ram 4
Uticaji u gredi: max M2= 255.13 / min M2= -157.58 kNm

Opt. 6: SW/2

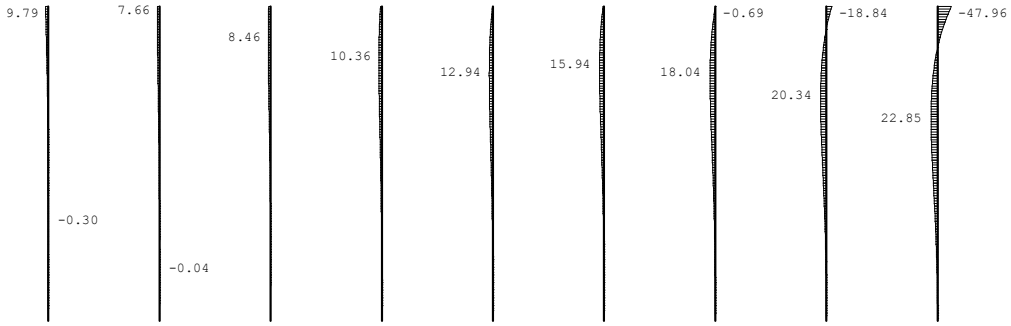


Ram: Ram 4
Uticaji u gredi: max M2= 281.29 / min M2= -189.55 kNm

Opt. 7: KP

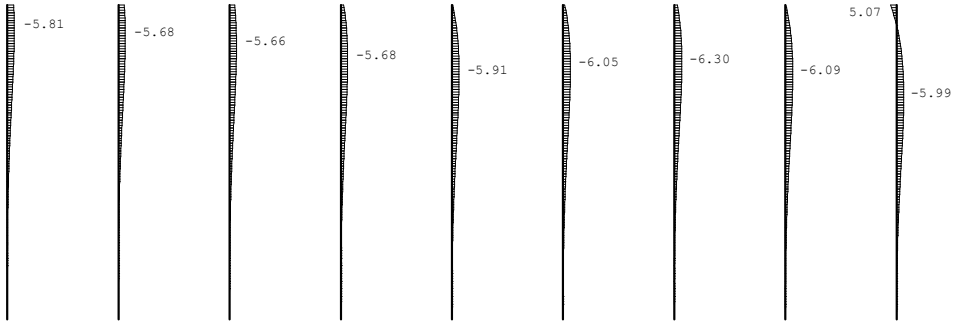
Ram: Ram 4
Uticaji u gredi: max M2= 27.99 / min M2= -91.95 kNm

Opt. 8: voz na nasipu ispred



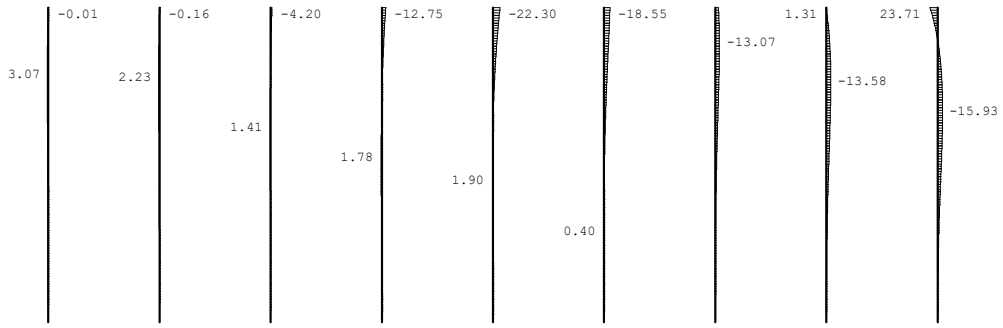
Ram: Ram 4
Uticaji u gredi: max M2= 35.42 / min M2= -106.25 kNm

Opt. 9: voz na nasipu iza



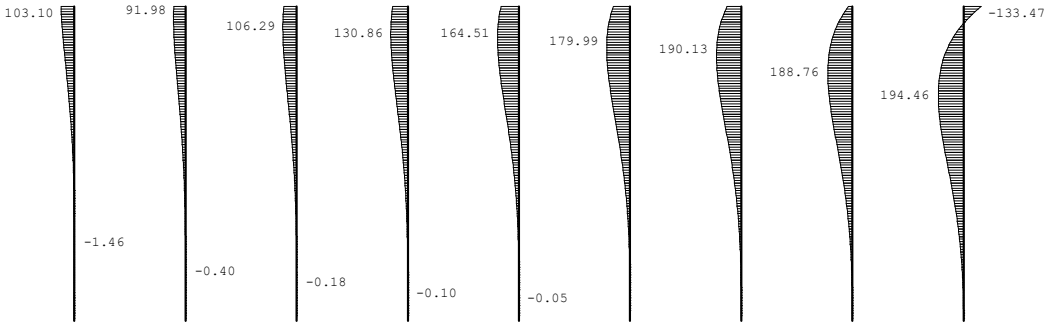
Ram: Ram 4
Uticaji u gredi: max M2= 25.32 / min M2= -9.56 kNm

Opt. 10: voz ispod



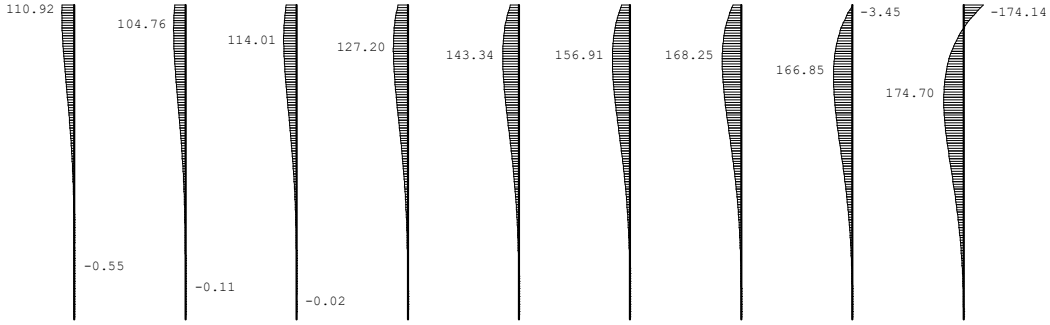
Ram: Ram 4
Uticaji u gredi: max M2= 23.71 / min M2= -96.38 kNm

Opt. 11: komb temp 1



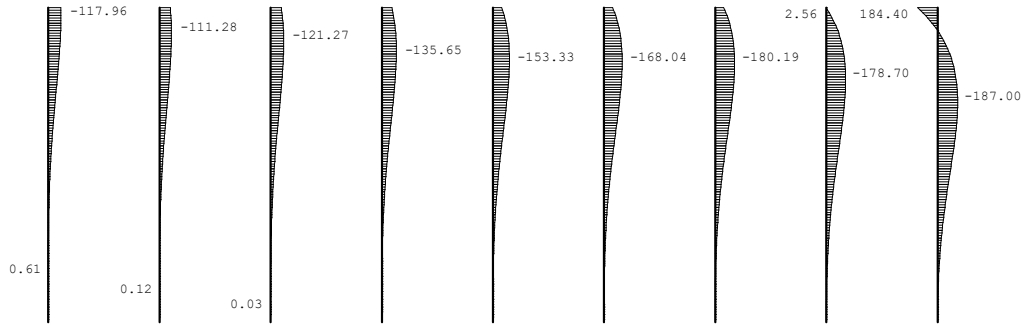
Ram: Ram 4
Uticaji u gredi: max M2= 234.07 / min M2= -187.23 kNm

Opt. 12: komb temp 2



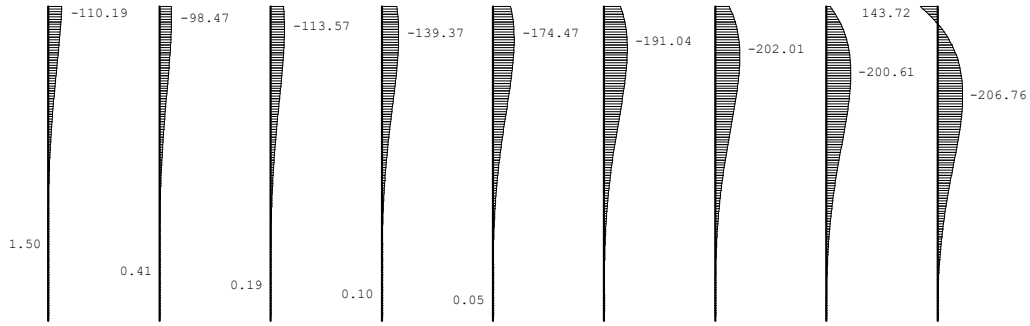
Ram: Ram 4
Uticaji u gredi: max M2= 266.25 / min M2= -268.70 kNm

Opt. 13: komb temp 3



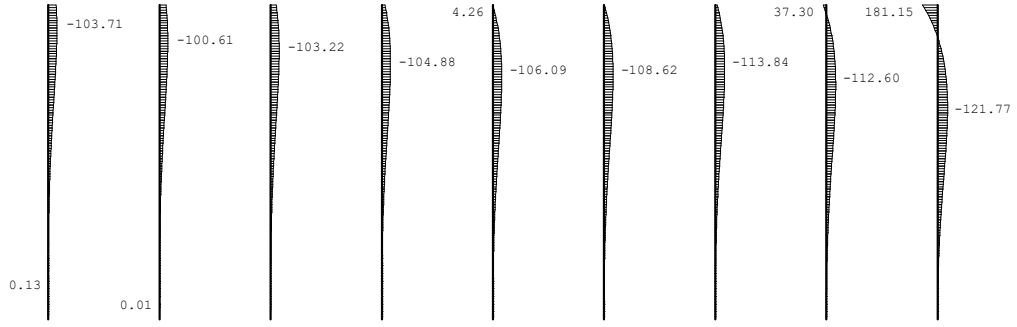
Ram: Ram 4
Uticaji u gredi: max M2= 283.89 / min M2= -282.93 kNm

Opt. 14: komb temp 4



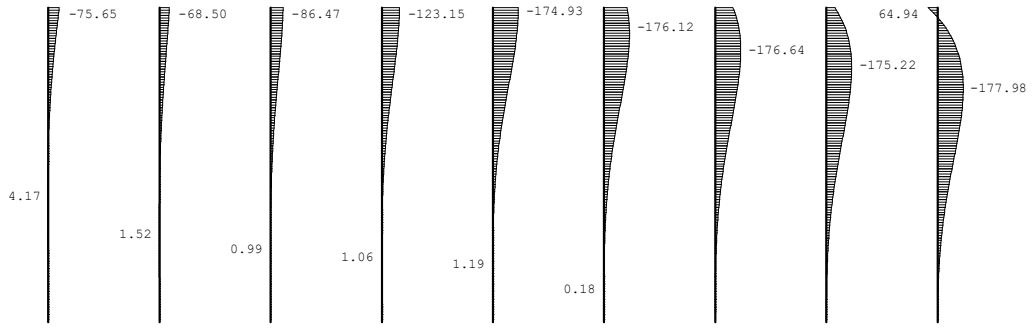
Ram: Ram 4
Uticaji u gredi: max M2= 202.43 / min M2= -250.75 kNm

Opt. 15: komb temp 5



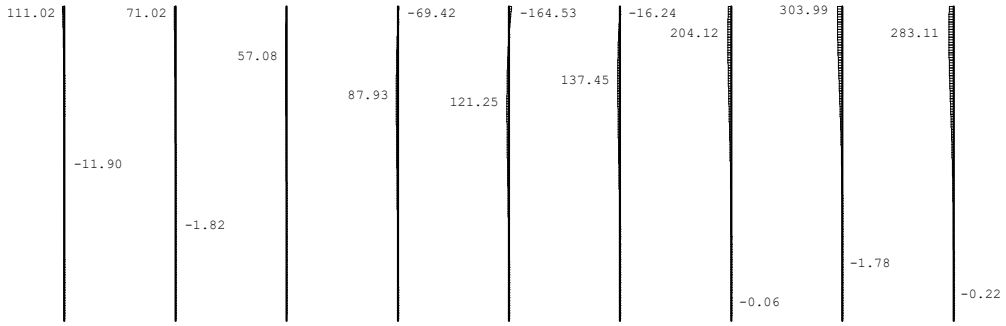
Ram: Ram 4
Uticaji u gredi: max M2= 370.03 / min M2= -251.35 kNm

Opt. 16: komb temp 6



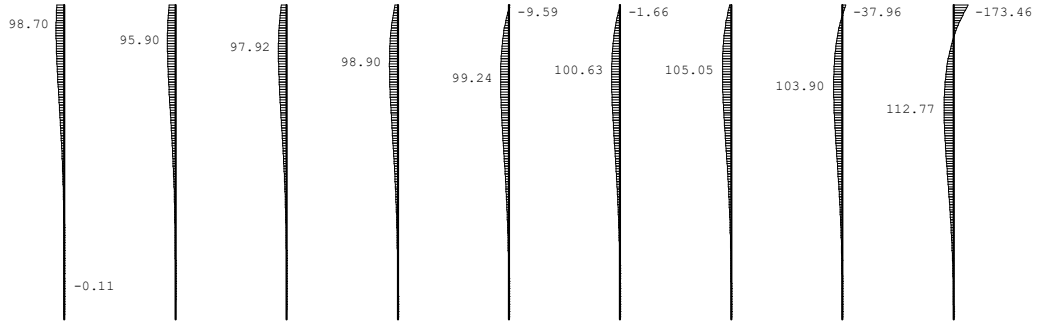
Ram: Ram 4
Uticaji u gredi: max M2= 65.99 / min M2= -211.37 kNm

Opt. 17: komb temp 7



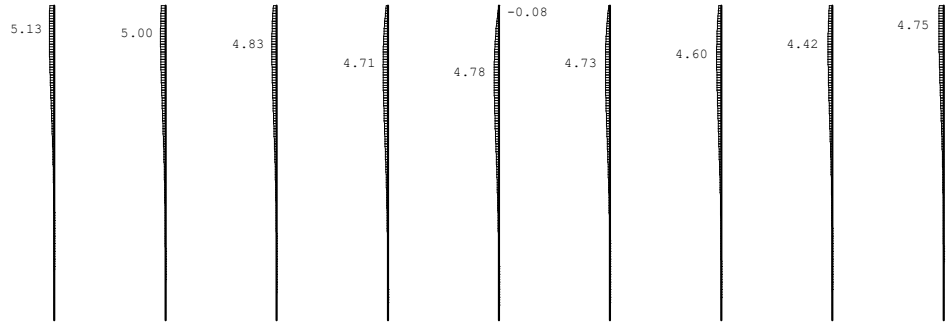
Ram: Ram 4
Uticaji u gredi: max M2= 1829.71 / min M2= -1598.58 kNm

Opt. 18: komb temp 8



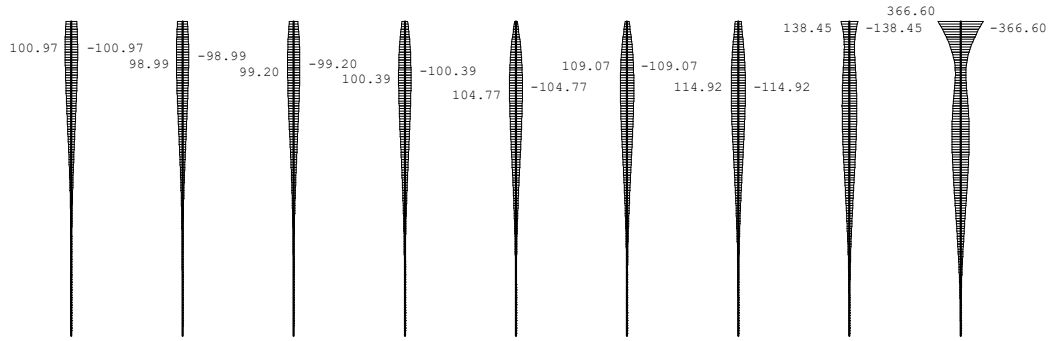
Ram: Ram 4
Uticaji u gredi: max M2= 240.62 / min M2= -362.10 kNm

Opt. 19: BU



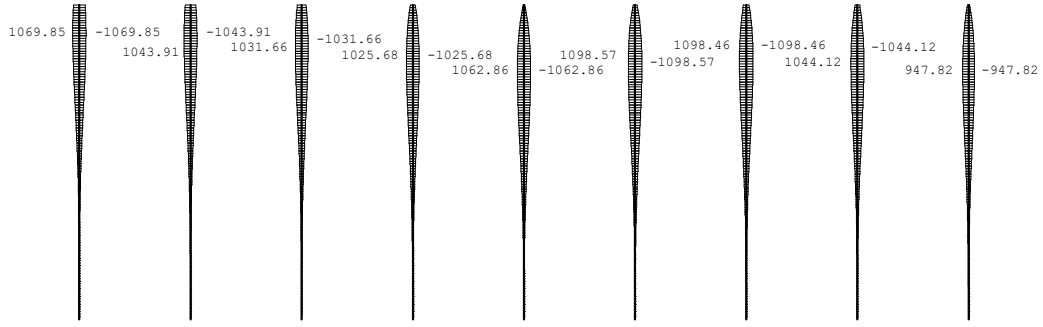
Ram: Ram 4
Uticaji u gredi: max M2= 5.13 / min M2= -30.65 kNm

Opt. 20: Sx



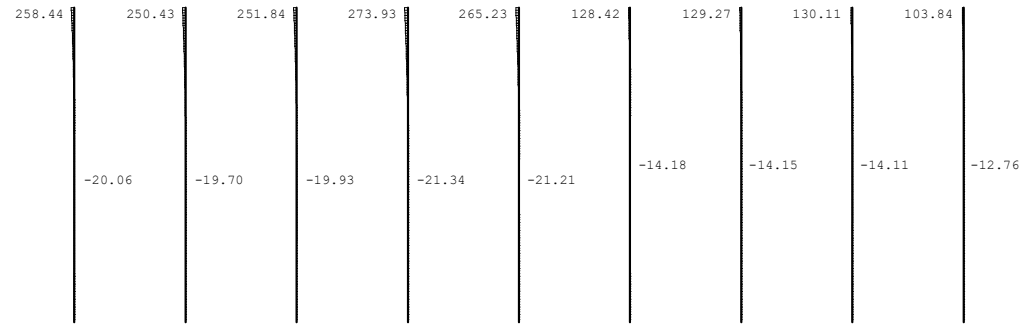
Ram: Ram 4
Uticaji u gredi: max M2= 494.26 / min M2= -494.26 kNm

Opt. 21: Sy



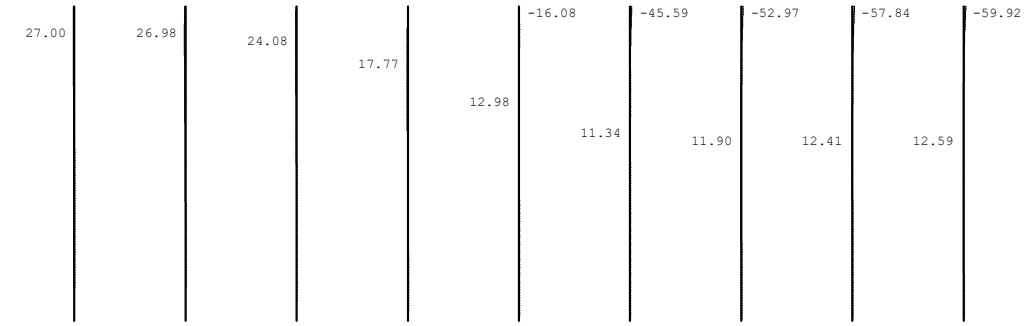
Ram: Ram 4
Uticaji u gredi: max M2= 4928.81 / min M2= -4928.81 kNm

Opt. 1: sopstvena tezina (g)



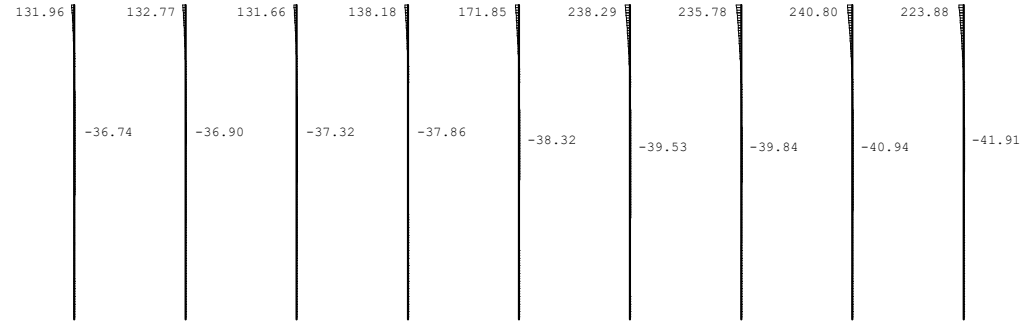
Ram: Ram 4
Uticaji u gredi: max M3= 2548.83 / min M3= -912.59 kNm

Opt. 2: mrtav teret (Δg)



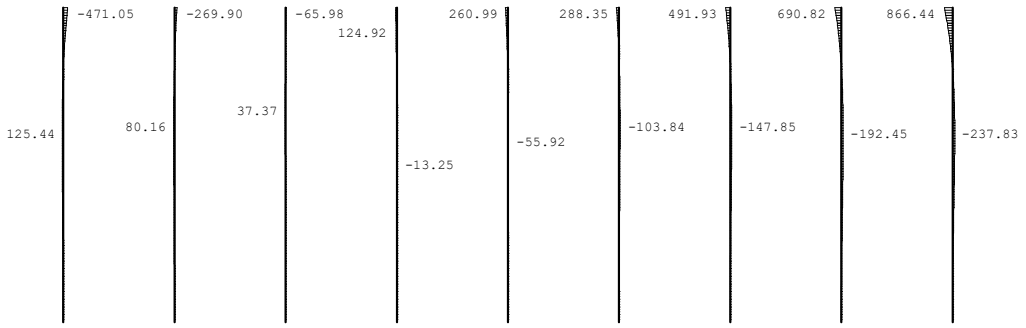
Ram: Ram 4
Uticaji u gredi: max M3= 806.34 / min M3= -77.64 kNm

Opt. 3: horizontalan pritisak tla



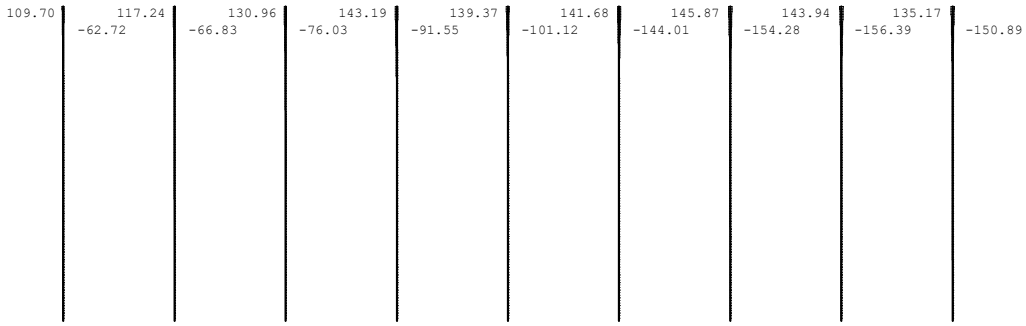
Ram: Ram 4
Uticaji u gredi: max M3= 386.20 / min M3= -1455.26 kNm

Opt. 4: skupljanje



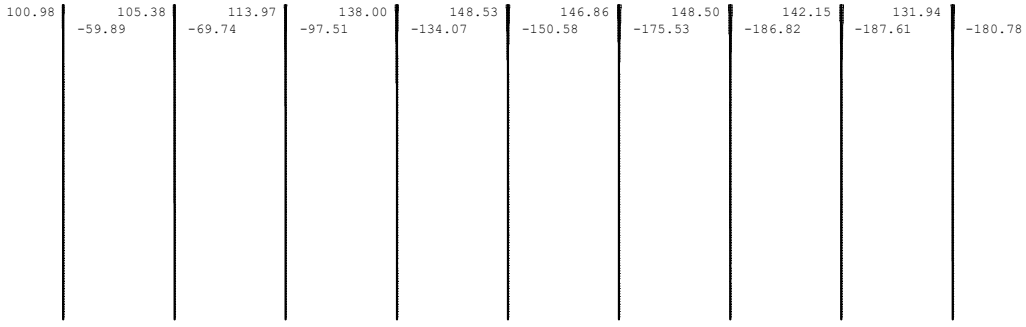
Ram: Ram 4
Uticaji u gredi: max M3= 3260.02 / min M3= -471.05 kNm

Opt. 5: LM71



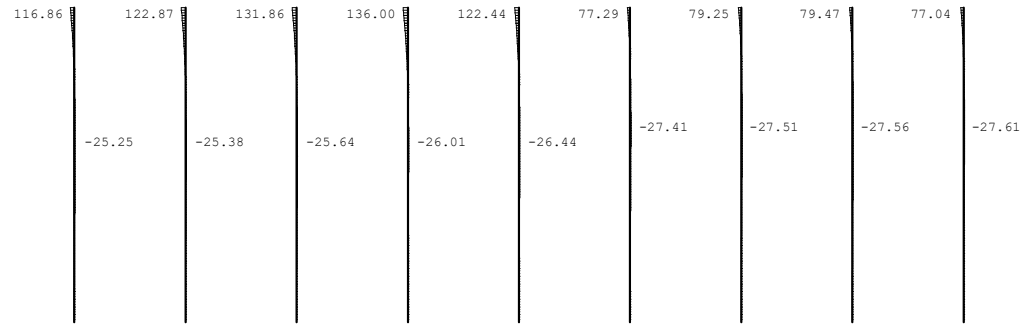
Ram: Ram 4
Uticaji u gredi: max M3= 2554.62 / min M3= -1273.44 kNm

Opt. 6: SW/2



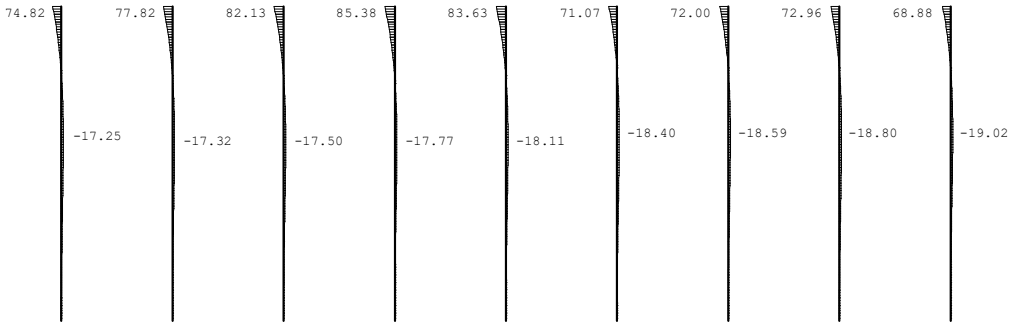
Ram: Ram 4
Uticaji u gredi: max M3= 2842.69 / min M3= -1082.61 kNm

Opt. 7: KP



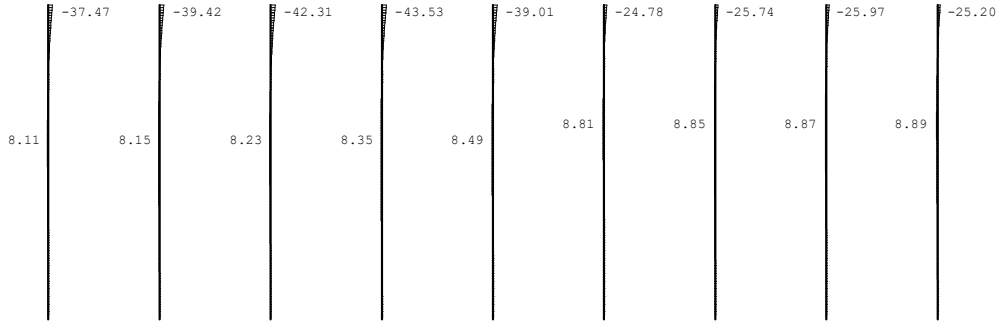
Ram: Ram 4
Uticaji u gredi: max M3= 875.58 / min M3= -299.56 kNm

Opt. 8: voz na nasipu ispred



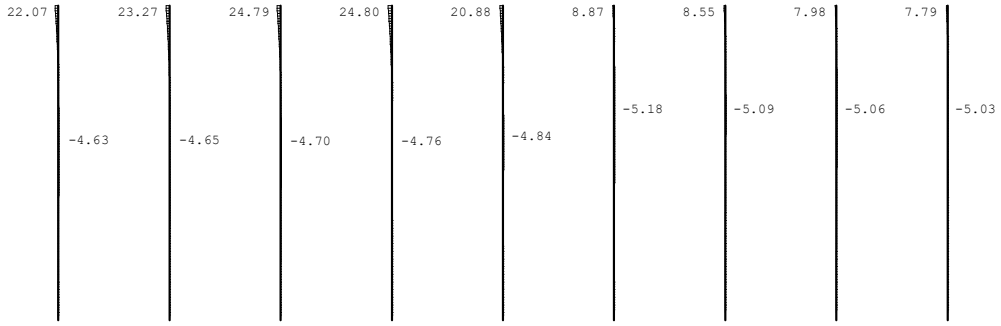
Ram: Ram 4
Uticaji u gredi: max M3= 260.64 / min M3= -140.72 kNm

Opt. 9: voz na nasipu iza



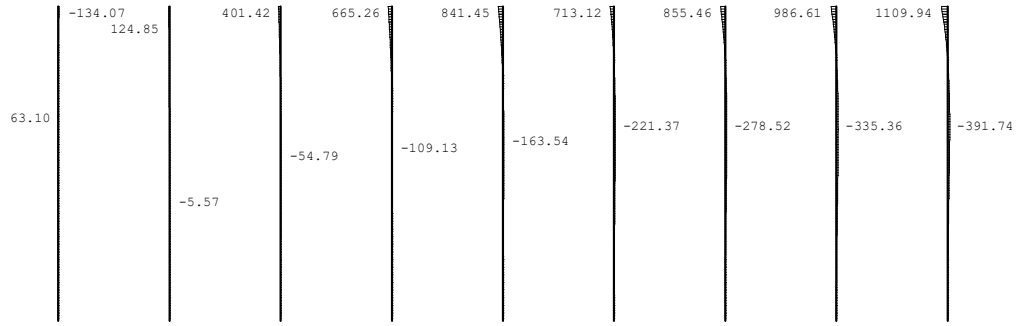
Ram: Ram 4
Uticaji u gredi: max M3= 96.64 / min M3= -280.79 kNm

Opt. 10: voz ispod



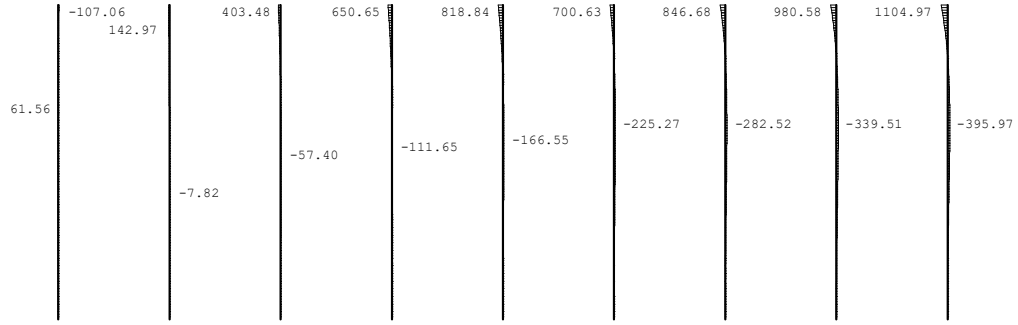
Ram: Ram 4
Uticaji u gredi: max M3= 200.20 / min M3= -55.46 kNm

Opt. 11: komb temp 1



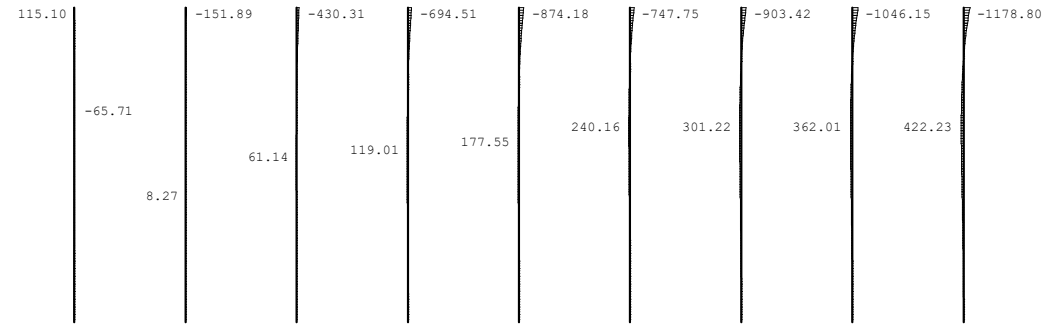
Ram: Ram 4
Uticaji u gredi: max M3= 5499.28 / min M3= -957.40 kNm

Opt. 12: komb temp 2



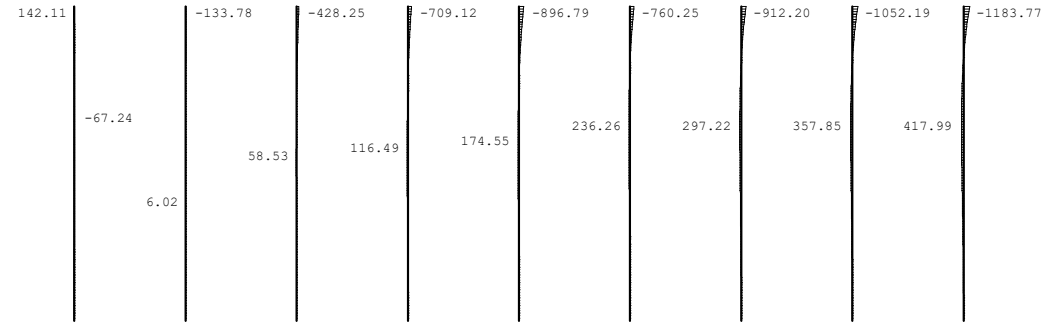
Ram: Ram 4
Uticaji u gredi: max M3= 5193.05 / min M3= -693.82 kNm

Opt. 13: komb temp 3



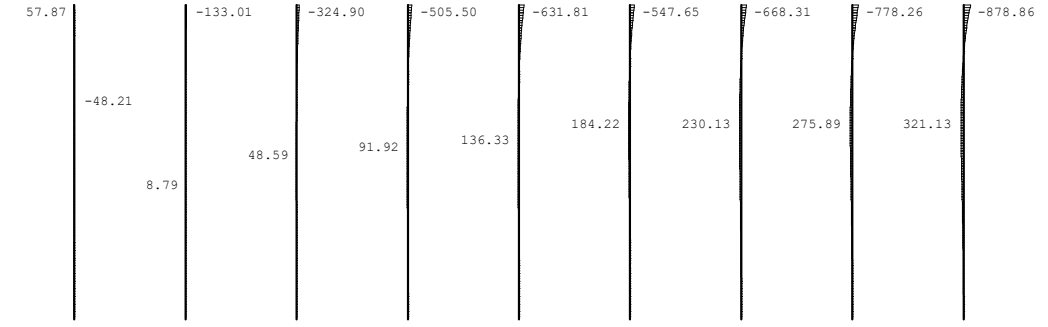
Ram: Ram 4
Uticaji u gredi: max M3= 704.40 / min M3= -5549.47 kNm

Opt. 14: komb temp 4



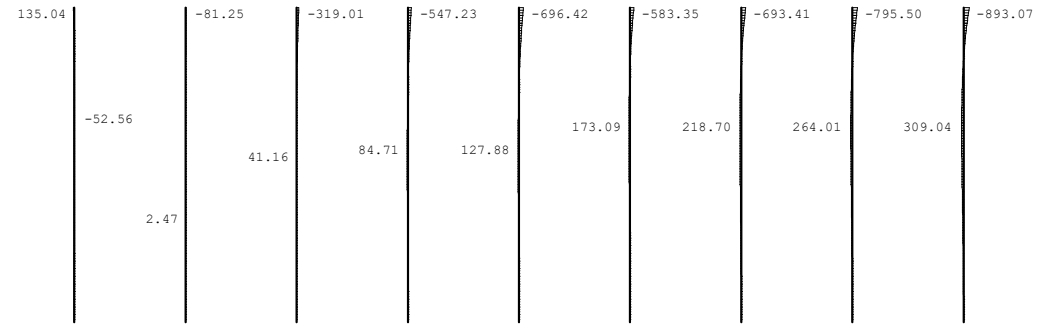
Ram: Ram 4
Uticaji u gredi: max M3= 1006.86 / min M3= -5855.69 kNm

Opt. 15: komb temp 5



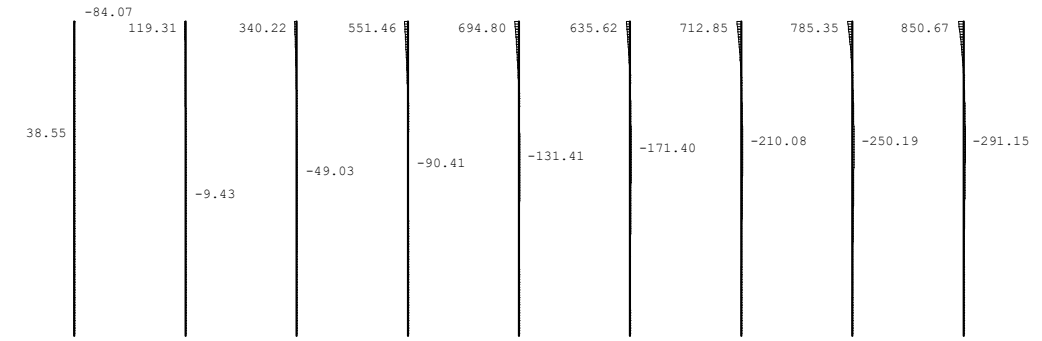
Ram: Ram 4
Uticaji u gredi: max M3= 1656.00 / min M3= -3839.47 kNm

Opt. 16: komb temp 6



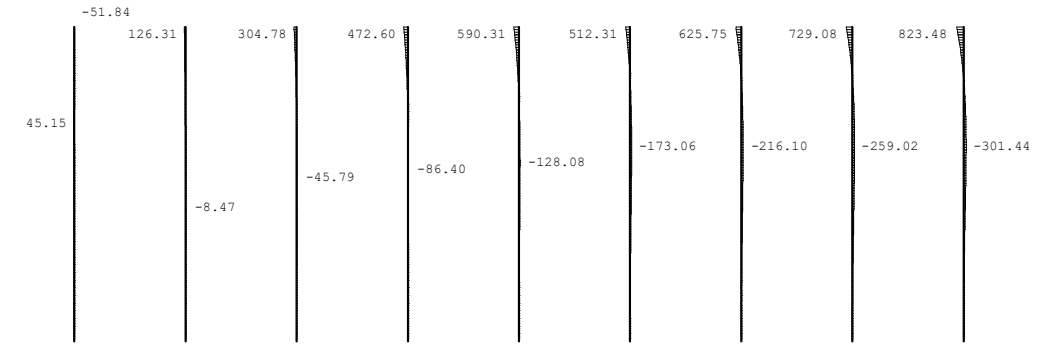
Ram: Ram 4
Uticaji u gredi: max M3= 1209.16 / min M3= -4714.40 kNm

Opt. 17: komb temp 7



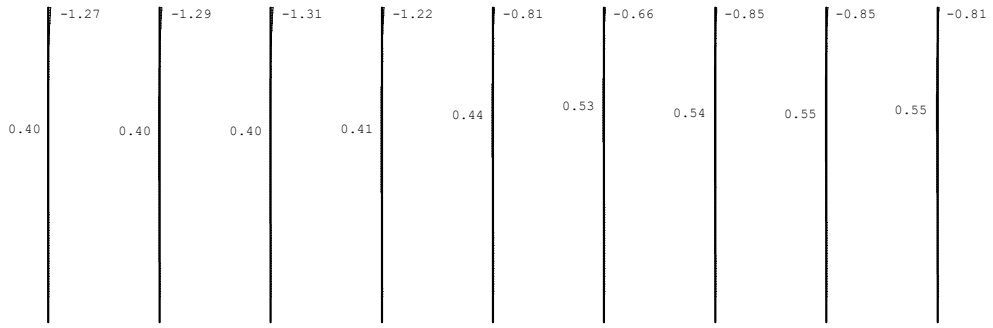
Ram: Ram 4
Uticaji u gredi: max M3= 4991.16 / min M3= -1022.00 kNm

Opt. 18: komb temp 8



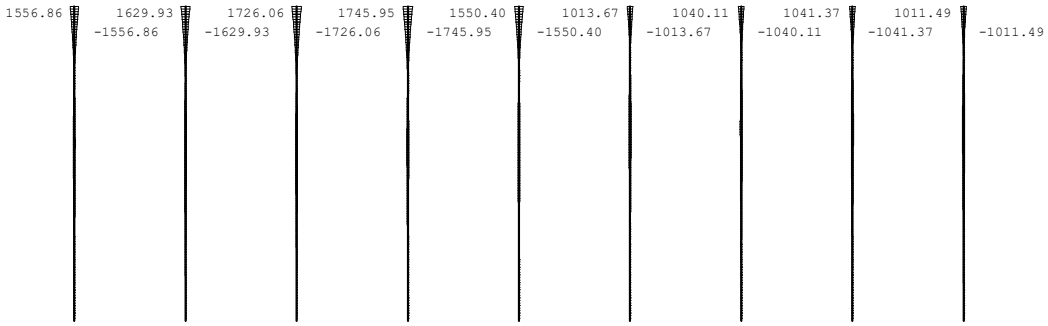
Ram: Ram 4
Uticaji u gredi: max M3= 3572.16 / min M3= -1648.07 kNm

Opt. 19: BU



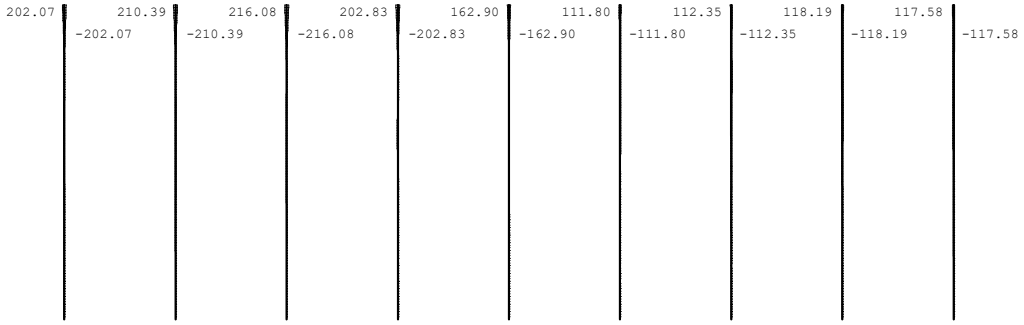
Ram: Ram 4
Uticaji u gredi: max M3= 2.12 / min M3= -17.06 kNm

Opt. 20: Sx



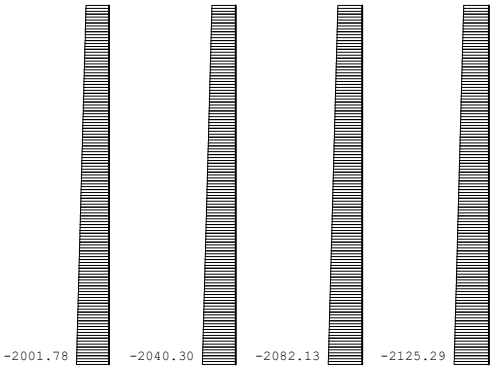
Ram: Ram 4
Uticaji u gredi: max M3= 11086.95 / min M3= -11086.95 kNm

Opt. 21: Sy



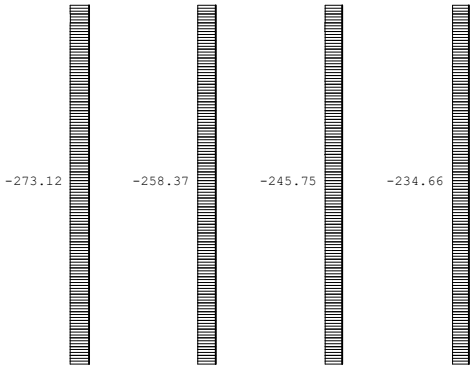
Ram: Ram 4
Uticaji u gredi: max M3= 3242.18 / min M3= -3242.18 kNm

Opt. 1: sopstvena tezina (g)



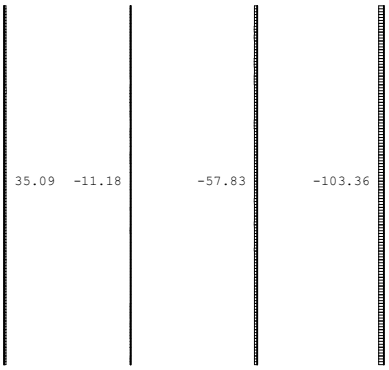
Ram: Ram 5
Uticaji u gredi: max N1= 569.21 / min N1= -2125.29 kN

Opt. 2: mrtav teret (Δg)



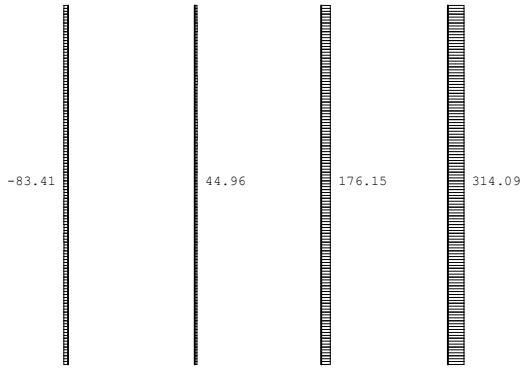
Ram: Ram 5
Uticaji u gredi: max N1= 498.08 / min N1= -273.12 kN

Opt. 3: horizontalan pritisak tla



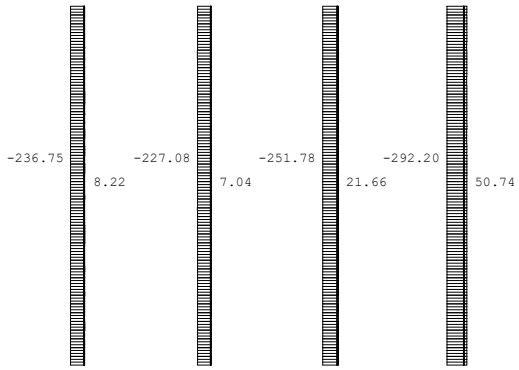
Ram: Ram 5
Uticaji u gredi: max N1= 35.09 / min N1= -688.76 kN

Opt. 4: skupljanje



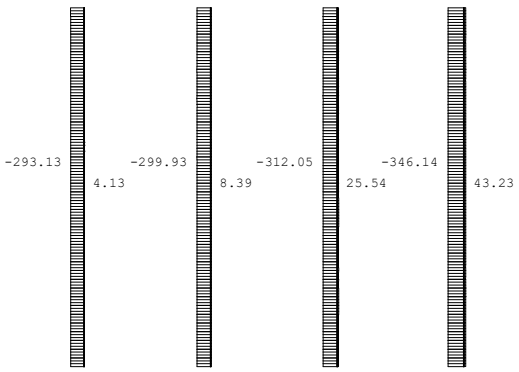
Ram: Ram 5
Uticaji u gredi: max N1= 671.60 / min N1= -83.41 kN

Opt. 5: LM71



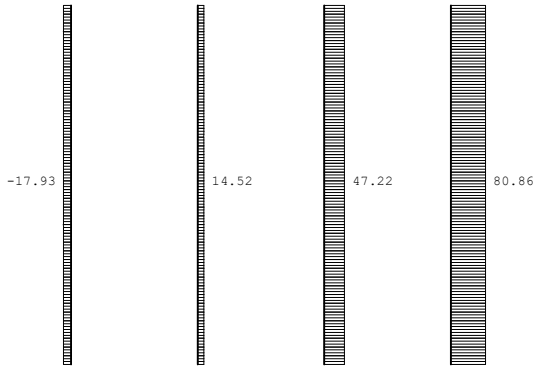
Ram: Ram 5
Uticaji u gredi: max N1= 602.44 / min N1= -292.20 kN

Opt. 6: SW/2



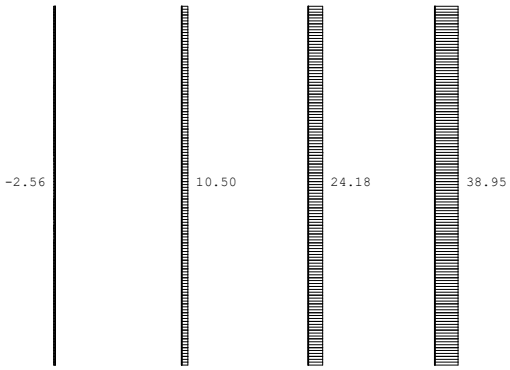
Ram: Ram 5
Uticaji u gredi: max N1= 762.07 / min N1= -346.14 kN

Opt. 7: KP



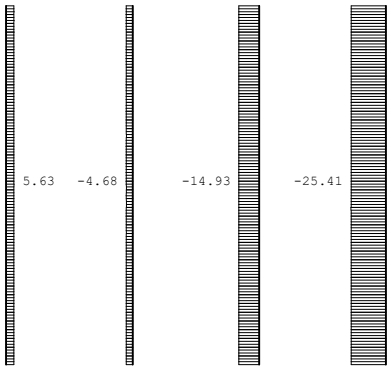
Ram: Ram 5
Uticaji u gredi: max N1= 80.86 / min N1= -28.16 kN

Opt. 8: voz na nasipu ispred



Ram: Ram 5
Uticaji u gredi: max N1= 38.95 / min N1= -58.32 kN

Opt. 9: voz na nasipu iza

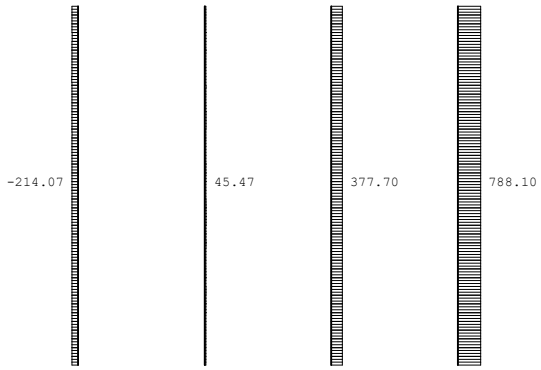


Ram: Ram 5
Uticaji u gredi: max N1= 8.17 / min N1= -25.41 kN

Opt. 10: voz ispod

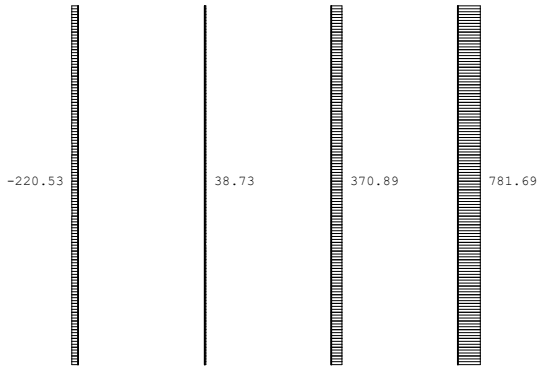
Ram: Ram 5
Uticaji u gredi: max N1= 4.68 / min N1= -82.12 kN

Opt. 11: komb temp 1



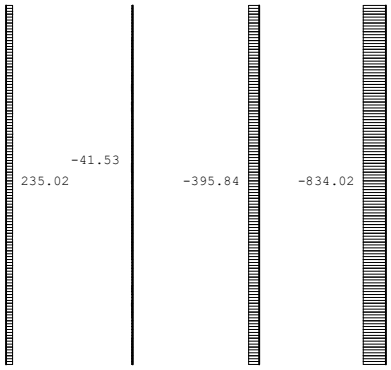
Ram: Ram 5
Uticaji u gredi: max N1= 1191.87 / min N1= -214.07 kN

Opt. 12: komb temp 2



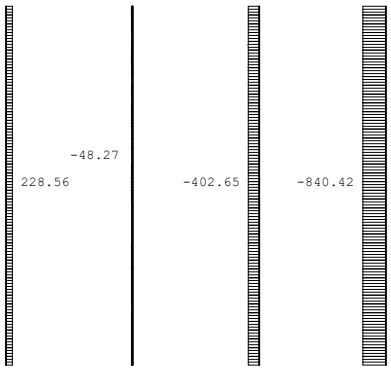
Ram: Ram 5
Uticaji u gredi: max N1= 1202.07 / min N1= -220.53 kN

Opt. 13: komb temp 3



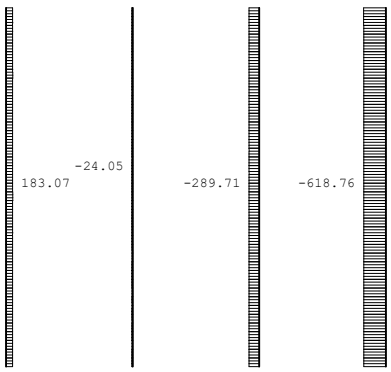
Ram: Ram 5
Uticaji u gredi: max N1= 235.02 / min N1= -1281.87 kN

Opt. 14: komb temp 4



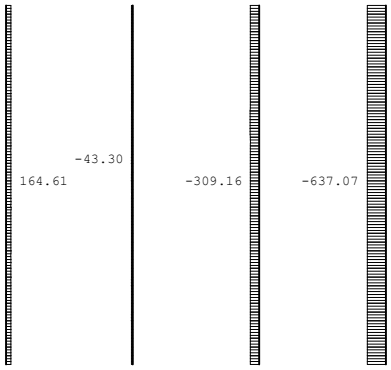
Ram: Ram 5
Uticaji u gredi: max N1= 228.56 / min N1= -1271.66 kN

Opt. 15: komb temp 5



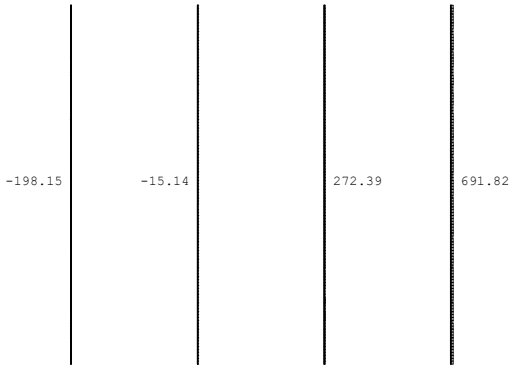
Ram: Ram 5
Uticaji u gredi: max N1= 183.07 / min N1= -972.15 kN

Opt. 16: komb temp 6



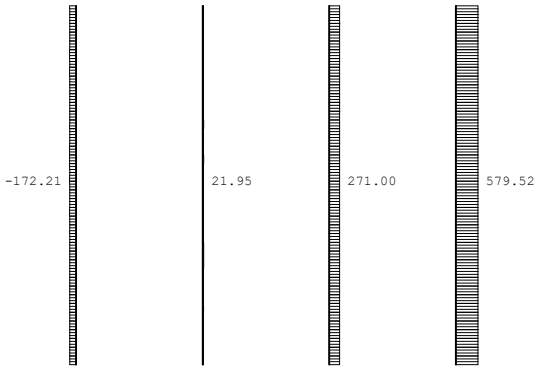
Ram: Ram 5
Uticaji u gredi: max N1= 164.61 / min N1= -1194.76 kN

Opt. 17: komb temp 7



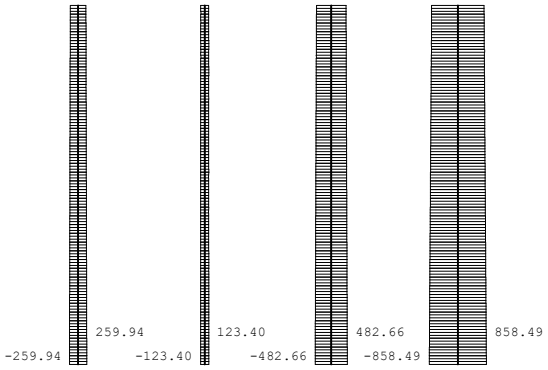
Ram: Ram 5
Uticaji u gredi: max N1= 10960.45 / min N1= -198.15 kN

Opt. 18: komb temp 8



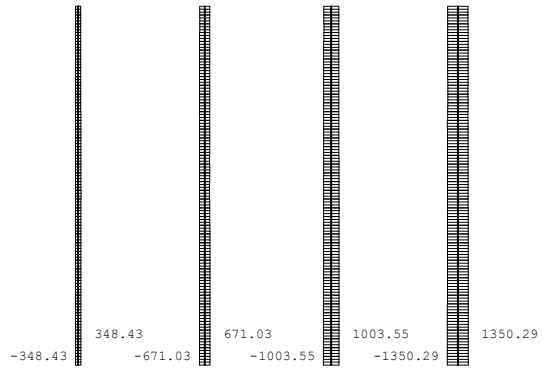
Ram: Ram 5
Uticaji u gredi: max N1= 912.30 / min N1= -172.21 kN

Opt. 20: Sx



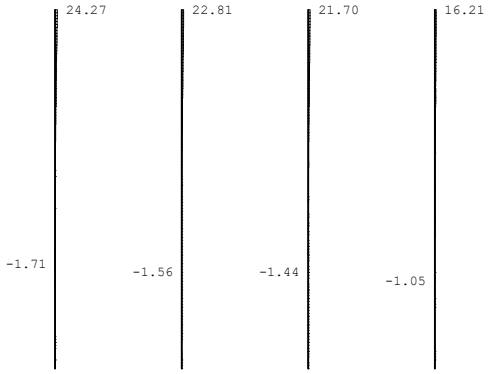
Ram: Ram 5
Uticaji u gredi: max N1= 1044.04 / min N1= -1044.04 kN

Opt. 21: Sy



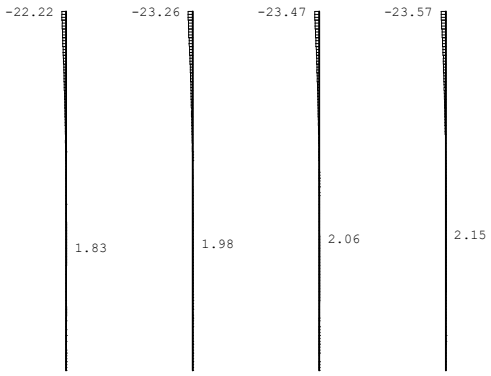
Ram: Ram 5
Uticaji u gredi: max N1= 4462.91 / min N1= -4462.91 kN

Opt. 1: sopstvena tezina (g)



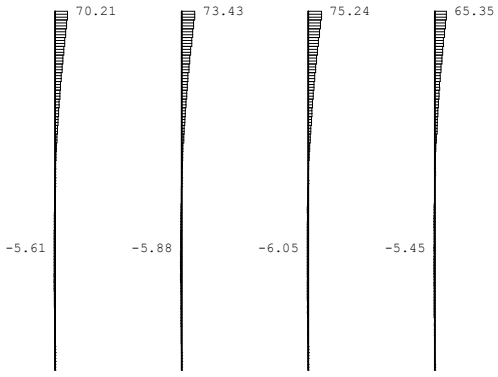
Ram: Ram 5
Uticaji u gredi: max T2= 399.49 / min T2= -372.65 kN

Opt. 2: mrtav teret (Δg)



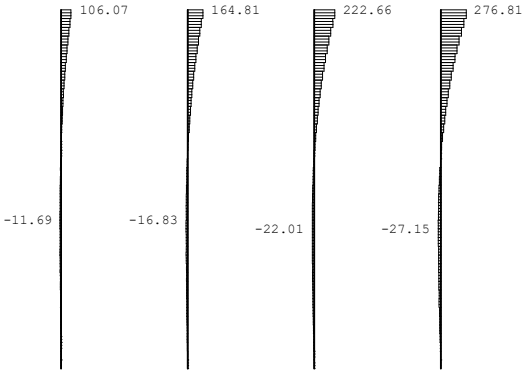
Ram: Ram 5
Uticaji u gredi: max T2= 36.56 / min T2= -178.13 kN

Opt. 3: horizontalan pritisak tla



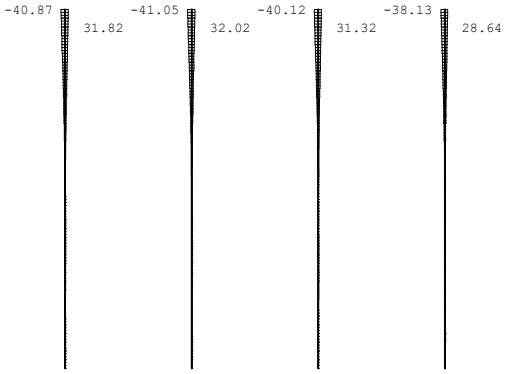
Ram: Ram 5
Uticaji u gredi: max T2= 196.84 / min T2= -6.05 kN

Opt. 4: skupljanje



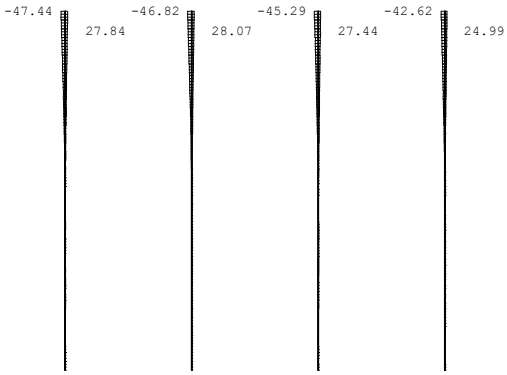
Ram: Ram 5
Uticaji u gredi: max T2= 276.81 / min T2= -376.58 kN

Opt. 5: LM71



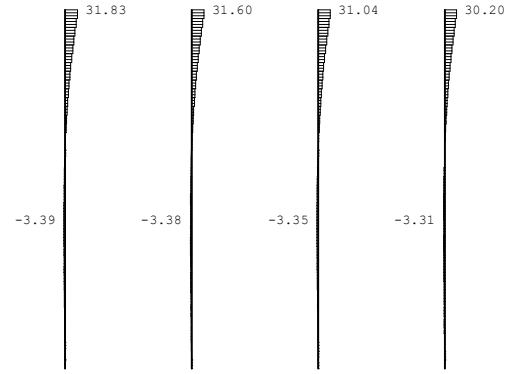
Ram: Ram 5
Uticaji u gredi: max T2= 133.53 / min T2= -346.99 kN

Opt. 6: SW/2



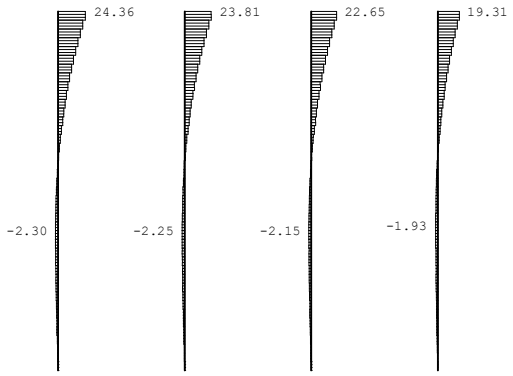
Ram: Ram 5
Uticaji u gredi: max T2= 106.31 / min T2= -405.92 kN

Opt. 7: KP



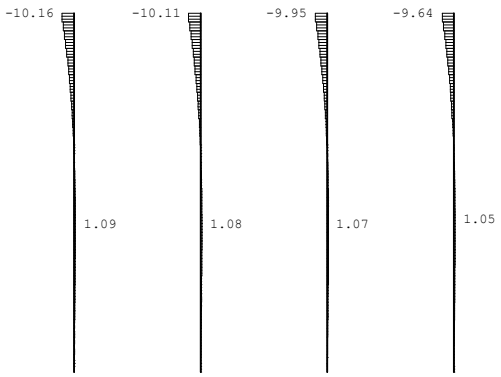
Ram: Ram 5
Uticaji u gredi: max T2= 34.32 / min T2= -88.99 kN

Opt. 8: voz na nasipu ispred



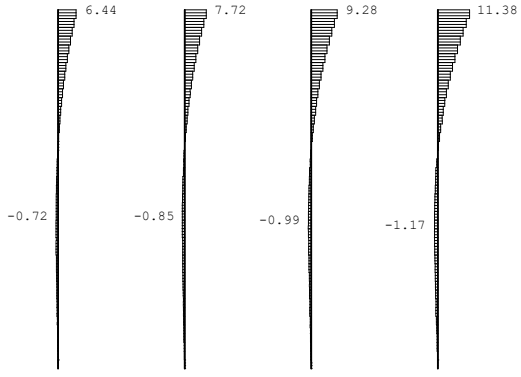
Ram: Ram 5
Uticaji u gredi: max T2= 31.02 / min T2= -22.20 kN

Opt. 9: voz na nasipu iza



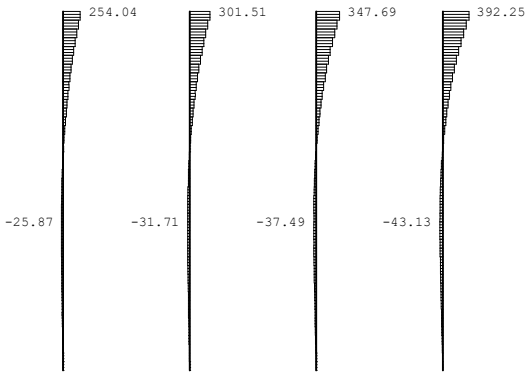
Ram: Ram 5
Uticaji u gredi: max T2= 28.97 / min T2= -10.97 kN

Opt. 10: voz ispod



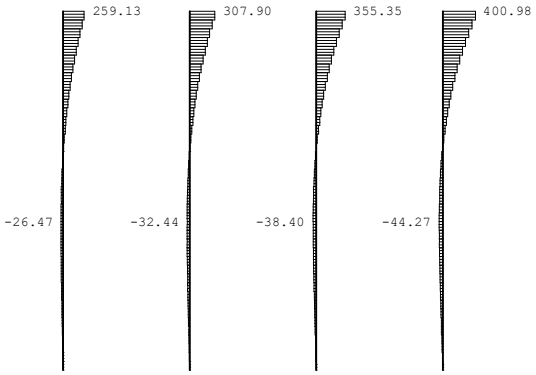
Ram: Ram 5
Uticaji u gredi: max T2= 11.81 / min T2= -12.45 kN

Opt. 11: komb temp 1



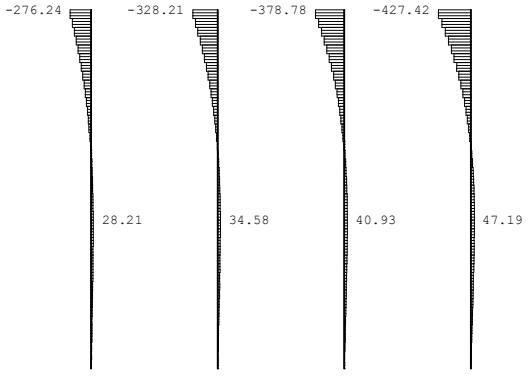
Ram: Ram 5
Uticaji u gredi: max T2= 392.25 / min T2= -518.38 kN

Opt. 12: komb temp 2



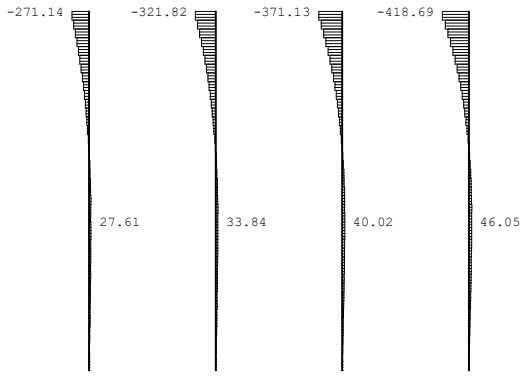
Ram: Ram 5
Uticaji u gredi: max T2= 400.98 / min T2= -426.03 kN

Opt. 13: komb temp 3



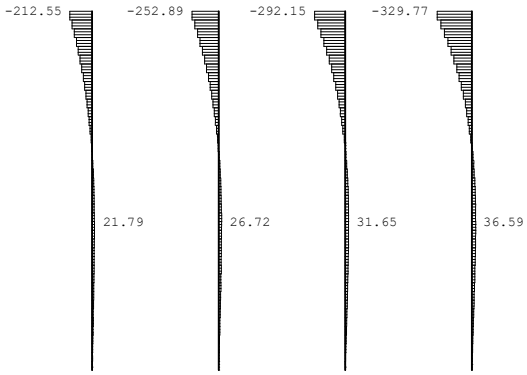
Ram: Ram 5
Uticaji u gredi: max T2= 457.51 / min T2= -427.42 kN

Opt. 14: komb temp 4



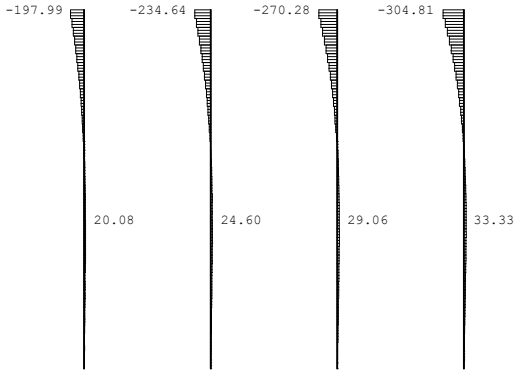
Ram: Ram 5
Uticaji u gredi: max T2= 549.86 / min T2= -418.69 kN

Opt. 15: komb temp 5



Ram: Ram 5
Uticaji u gredi: max T2= 245.84 / min T2= -329.77 kN

Opt. 16: komb temp 6

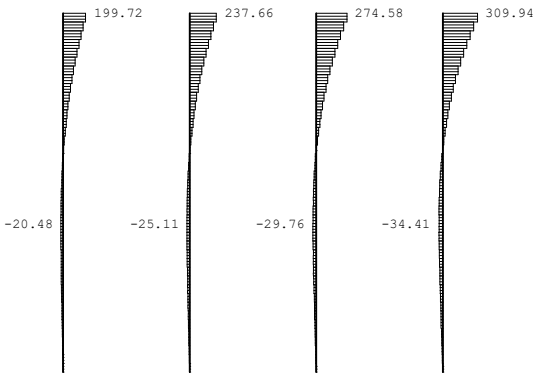


Ram: Ram 5
Uticaji u gredi: max T2= 509.68 / min T2= -304.81 kN

Opt. 17: komb temp 7

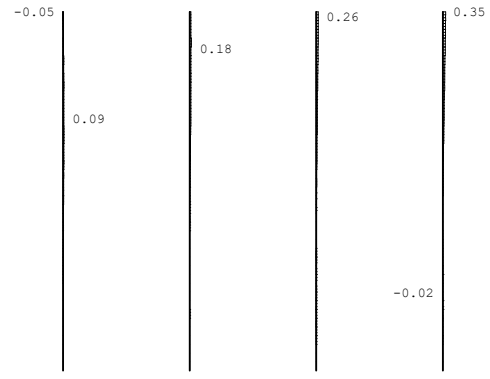
Ram: Ram 5
Uticaji u gredi: max T2= 2610.85 / min T2= -2094.52 kN

Opt. 18: komb temp 8



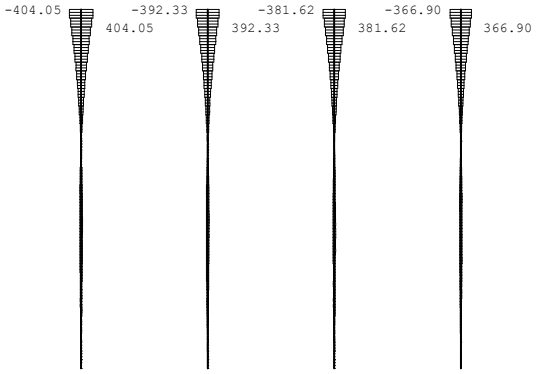
Ram: Ram 5
Uticaji u gredi: max T2= 309.94 / min T2= -222.23 kN

Opt. 19: BU



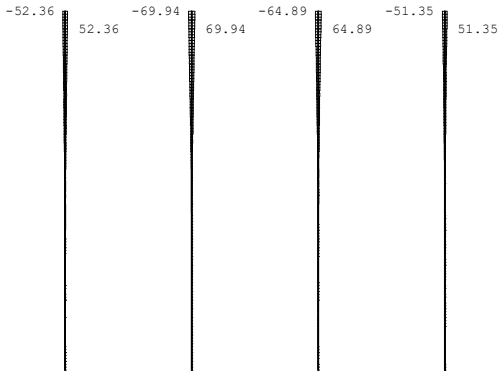
Ram: Ram 5
Uticaji u gredi: max T2= 4.34 / min T2= -0.78 kN

Opt. 20: Sx



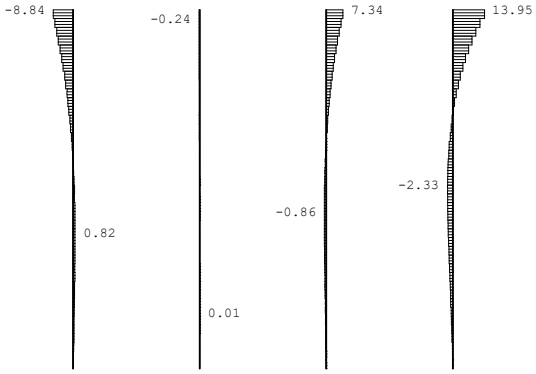
Ram: Ram 5
Uticaji u gredi: max T2= 1193.05 / min T2= -1193.05 kN

Opt. 21: Sy



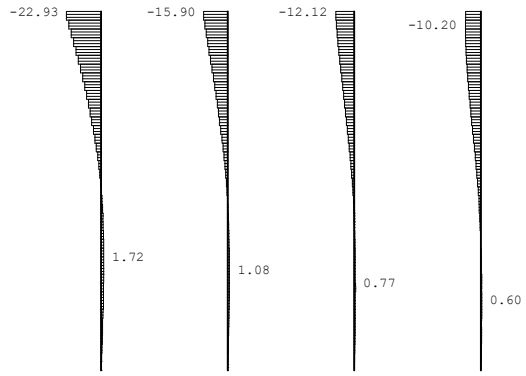
Ram: Ram 5
Uticaji u gredi: max T2= 779.18 / min T2= -779.18 kN

Opt. 1: sopstvena tezina (g)



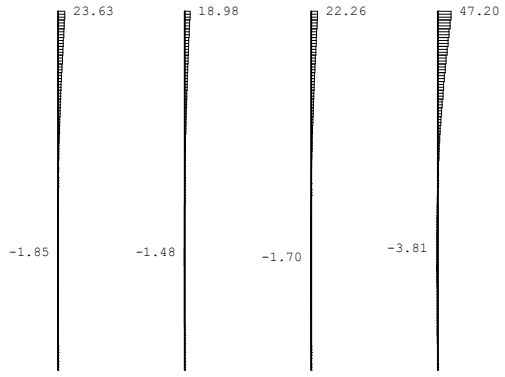
Ram: Ram 5
Uticaji u gredi: max T3= 13.95 / min T3= -15.35 kN

Opt. 2: mrtav teret (Δg)



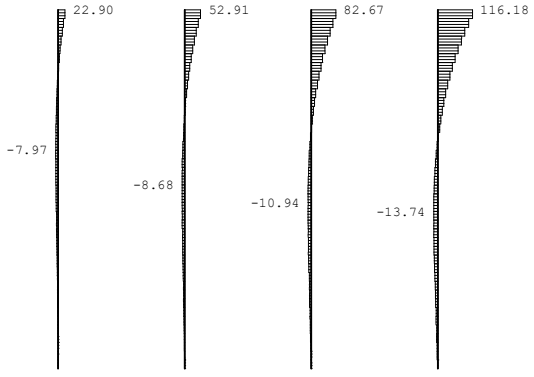
Ram: Ram 5
Uticaji u gredi: max T3= 6.95 / min T3= -22.93 kN

Opt. 3: horizontalan pritisak tla



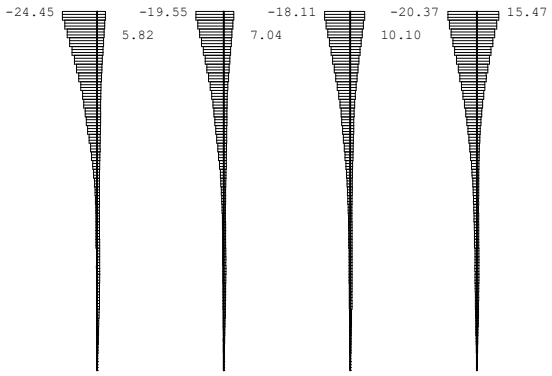
Ram: Ram 5
Uticaji u gredi: max T3= 47.20 / min T3= -123.12 kN

Opt. 4: skupljanje



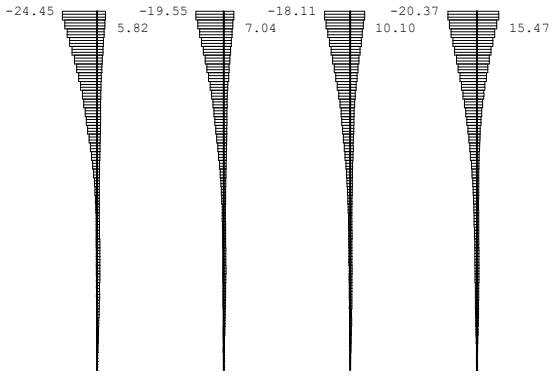
Ram: Ram 5
Uticaji u gredi: max T3= 116.18 / min T3= -21.50 kN

Opt. 5: LM71



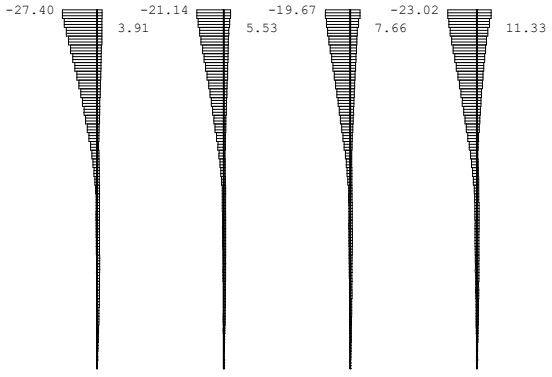
Ram: Ram 5
Uticaji u gredi: max T3= 15.47 / min T3= -24.45 kN

Opt. 5: LM71



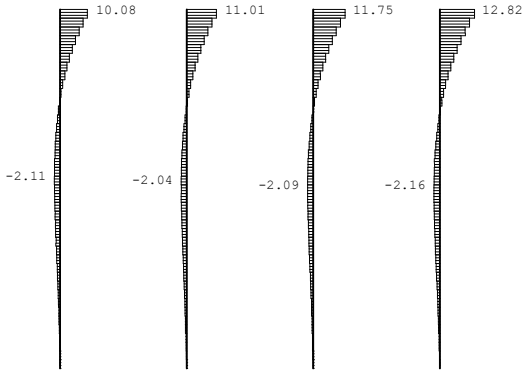
Ram: Ram 5
Uticaji u gredi: max T3= 15.47 / min T3= -24.45 kN

Opt. 6: SW/2



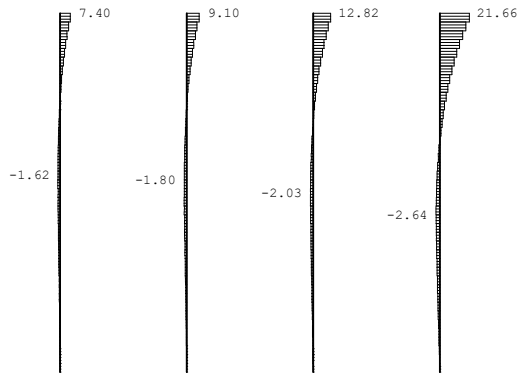
Ram: Ram 5
Uticaji u gredi: max T3= 13.34 / min T3= -27.40 kN

Opt. 7: KP



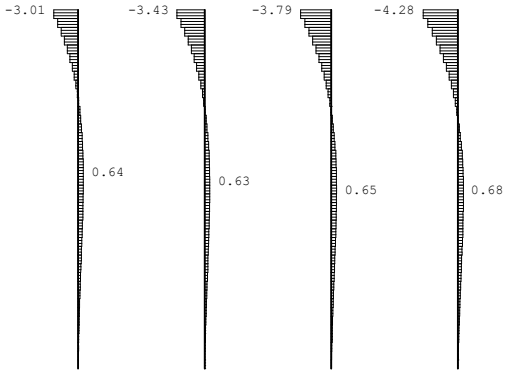
Ram: Ram 5
Uticaji u gredi: max T3= 12.82 / min T3= -2.32 kN

Opt. 8: voz na nasipu ispred



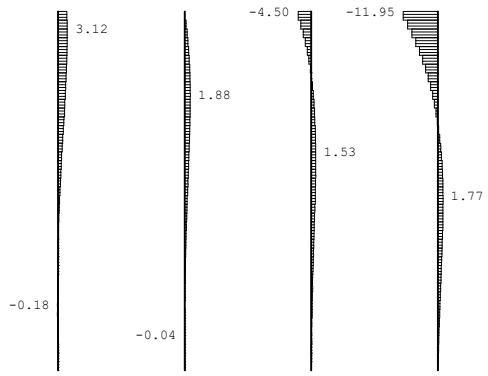
Ram: Ram 5
Uticaji u gredi: max T3= 21.66 / min T3= -25.49 kN

Opt. 9: voz na nasipu iza



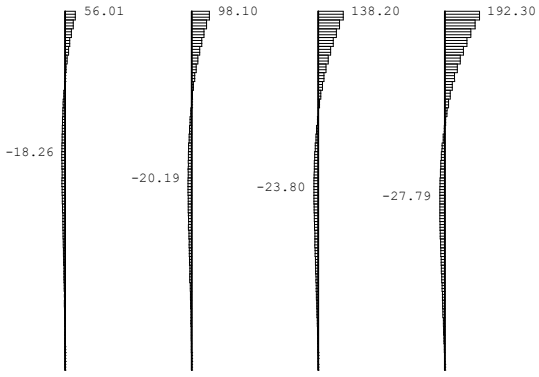
Ram: Ram 5
Uticaji u gredi: max T3= 0.83 / min T3= -4.28 kN

Opt. 10: voz ispod



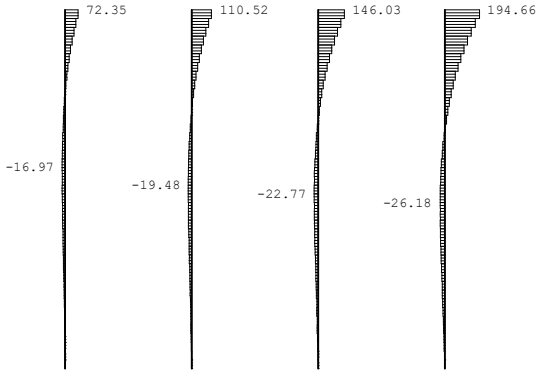
Ram: Ram 5
Uticaji u gredi: max T3= 8.56 / min T3= -11.95 kN

Opt. 11: komb temp 1



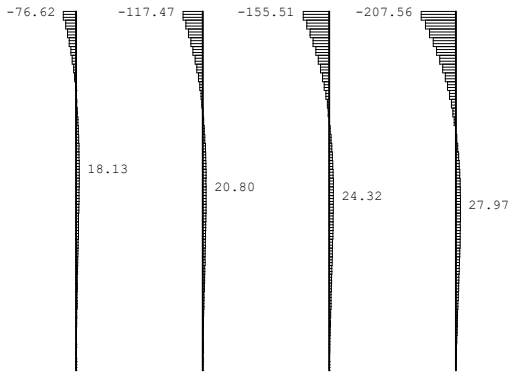
Ram: Ram 5
Uticaji u gredi: max T3= 192.30 / min T3= -62.05 kN

Opt. 12: komb temp 2



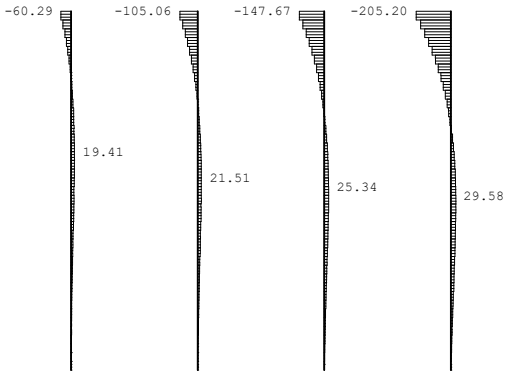
Ram: Ram 5
Uticaji u gredi: max T3= 194.66 / min T3= -65.99 kN

Opt. 13: komb temp 3



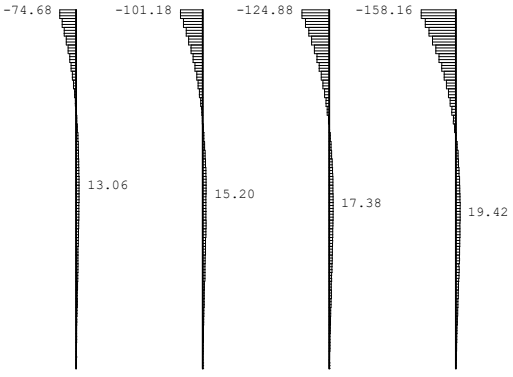
Ram: Ram 5
Uticaji u gredi: max T3= 70.26 / min T3= -207.56 kN

Opt. 14: komb temp 4



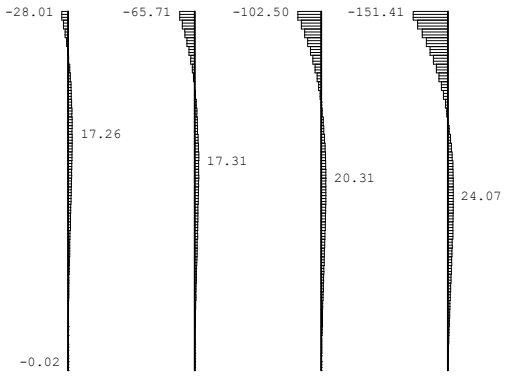
Ram: Ram 5
Uticaji u gredi: max T3= 66.32 / min T3= -205.20 kN

Opt. 15: komb temp 5



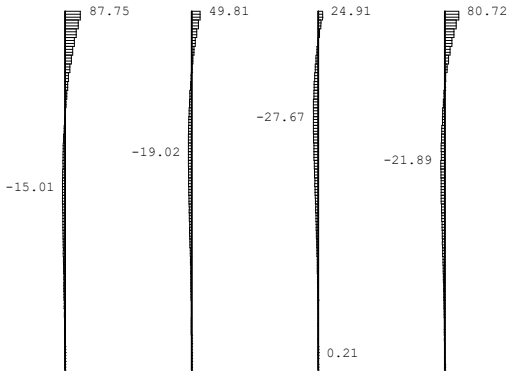
Ram: Ram 5
Uticaji u gredi: max T3= 56.84 / min T3= -158.16 kN

Opt. 16: komb temp 6



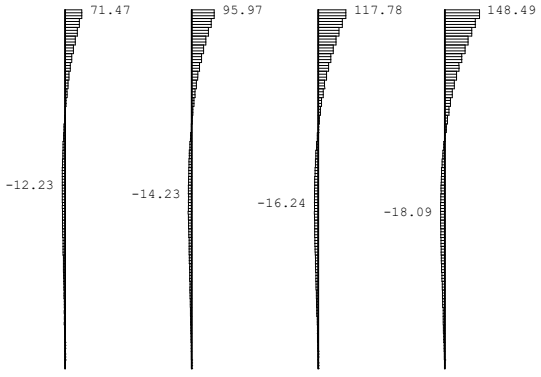
Ram: Ram 5
Uticaji u gredi: max T3= 45.59 / min T3= -151.41 kN

Opt. 17: komb temp 7



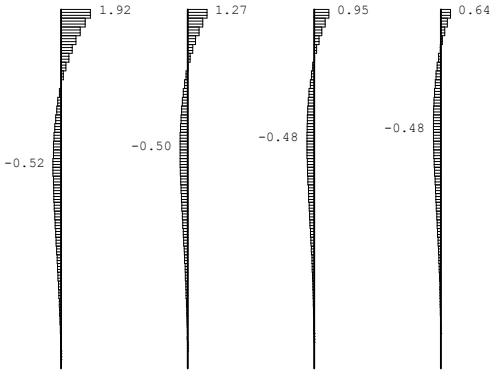
Ram: Ram 5
Uticaji u gredi: max T3= 200.10 / min T3= -125.13 kN

Opt. 18: komb temp 8



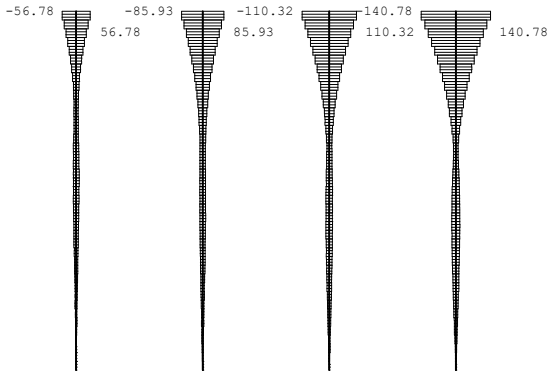
Ram: Ram 5
Uticaji u gredi: max T3= 148.49 / min T3= -53.64 kN

Opt. 19: BU



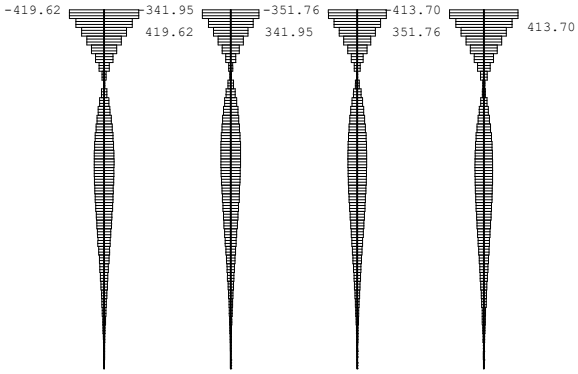
Ram: Ram 5
Uticaji u gredi: max T3= 2.27 / min T3= -0.85 kN

Opt. 20: Sx



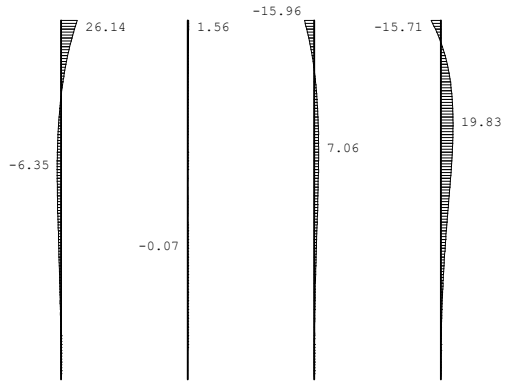
Ram: Ram 5
Uticaji u gredi: max T3= 140.78 / min T3= -140.78 kN

Opt. 21: Sy



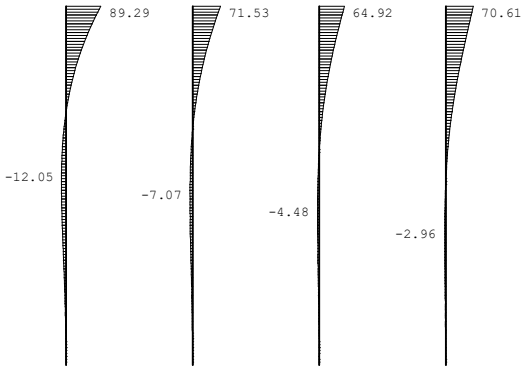
Ram: Ram 5
Uticaji u gredi: max T3= 419.62 / min T3= -419.62 kN

Opt. 1: sopstvena tezina (g)



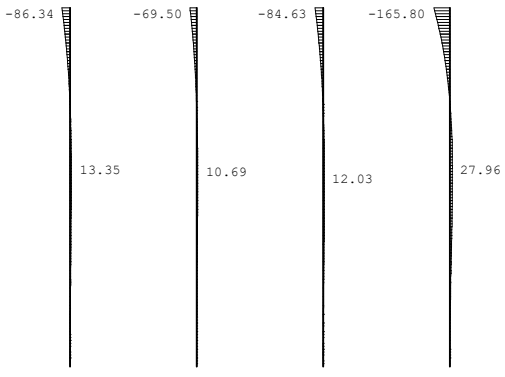
Ram: Ram 5
Uticaji u gredi: max M2= 52.73 / min M2= -56.30 kNm

Opt. 2: mrtav teret (Δg)



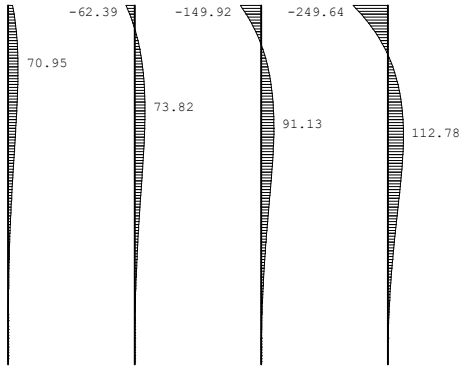
Ram: Ram 5
Uticaji u gredi: max M2= 89.29 / min M2= -31.38 kNm

Opt. 3: horizontalan pritisak tla



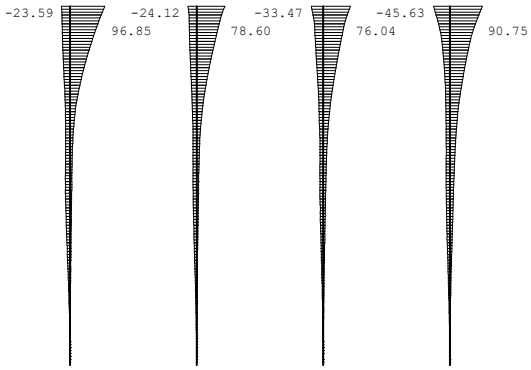
Ram: Ram 5
Uticaji u gredi: max M2= 90.39 / min M2= -361.66 kNm

Opt. 4: skupljanje



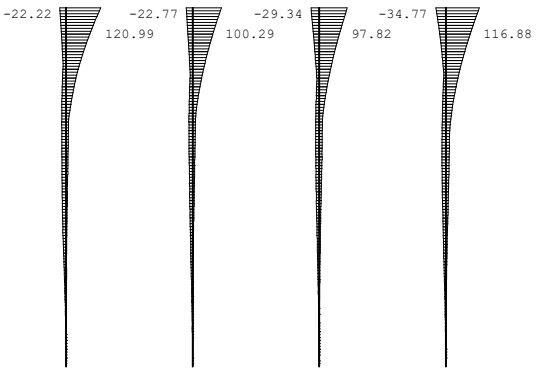
Ram: Ram 5
Uticaji u gredi: max M2= 112.78 / min M2= -249.64 kNm

Opt. 5: LM71



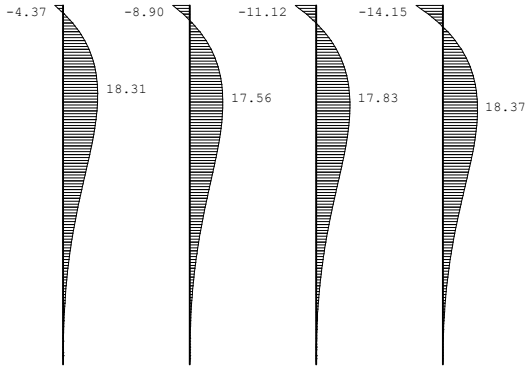
Ram: Ram 5
Uticaji u gredi: max M2= 96.85 / min M2= -86.02 kNm

Opt. 6: SW/2



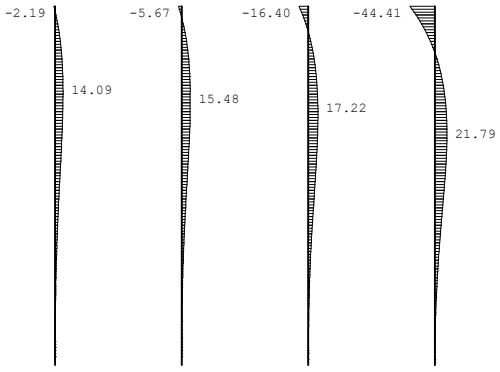
Ram: Ram 5
Uticaji u gredi: max M2= 120.99 / min M2= -76.06 kNm

Opt. 7: KP



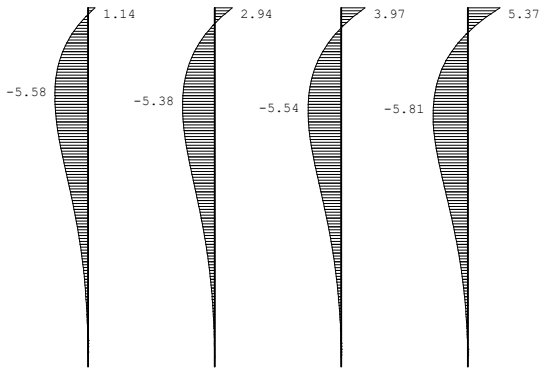
Ram: Ram 5
Uticaji u gredi: max M2= 18.37 / min M2= -14.15 kNm

Opt. 8: voz na nasipu ispred



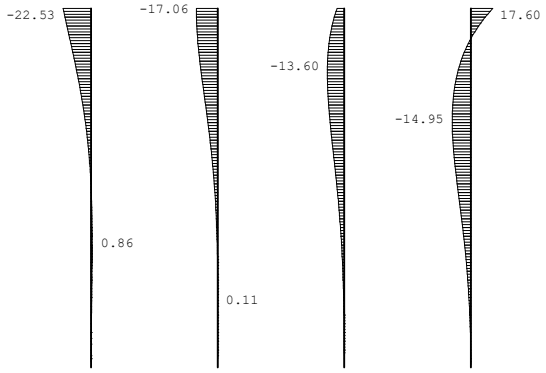
Ram: Ram 5
Uticaji u gredi: max M2= 21.79 / min M2= -62.14 kNm

Opt. 9: voz na nasipu iza



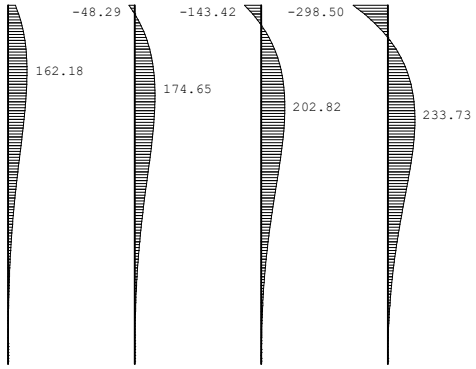
Ram: Ram 5
Uticaji u gredi: max M2= 5.37 / min M2= -5.81 kNm

Opt. 10: voz ispod



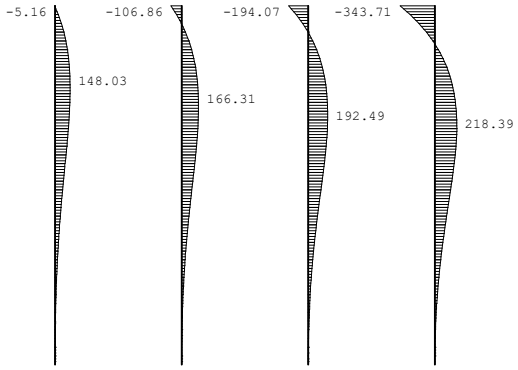
Ram: Ram 5
Uticaji u gredi: max M2= 27.87 / min M2= -23.18 kNm

Opt. 11: komb temp 1



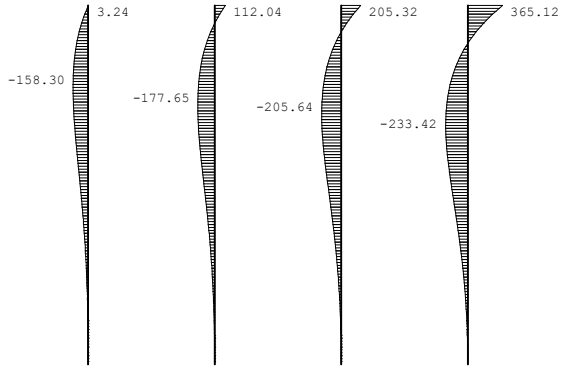
Ram: Ram 5
Uticaji u gredi: max M2= 233.73 / min M2= -298.50 kNm

Opt. 12: komb temp 2



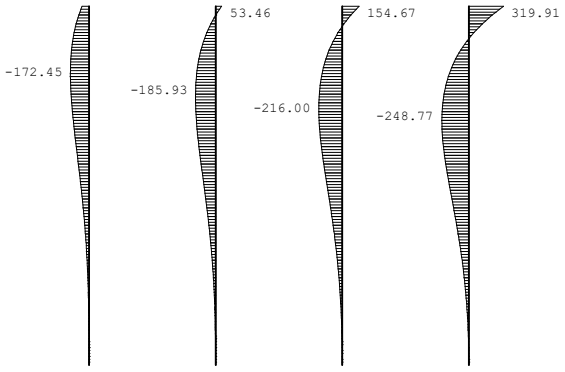
Ram: Ram 5
Uticaji u gredi: max M2= 218.39 / min M2= -343.71 kNm

Opt. 13: komb temp 3



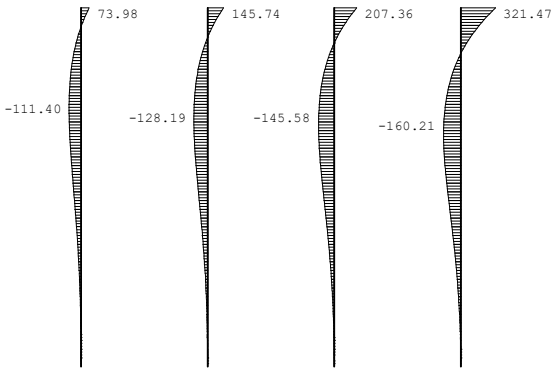
Ram: Ram 5
Uticaji u gredi: max M2= 365.12 / min M2= -233.42 kNm

Opt. 14: komb temp 4



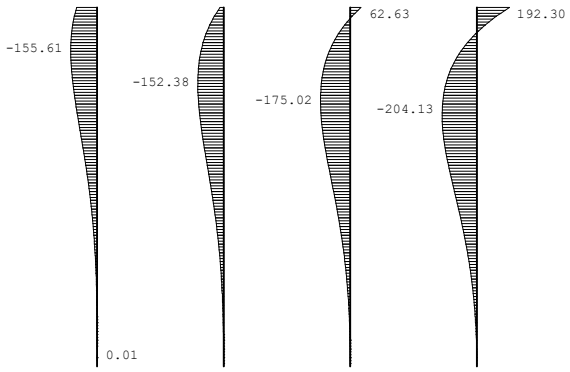
Ram: Ram 5
Uticaji u gredi: max M2= 319.91 / min M2= -248.77 kNm

Opt. 15: komb temp 5



Ram: Ram 5
Uticaji u gredi: max M2= 321.47 / min M2= -160.21 kNm

Opt. 16: komb temp 6

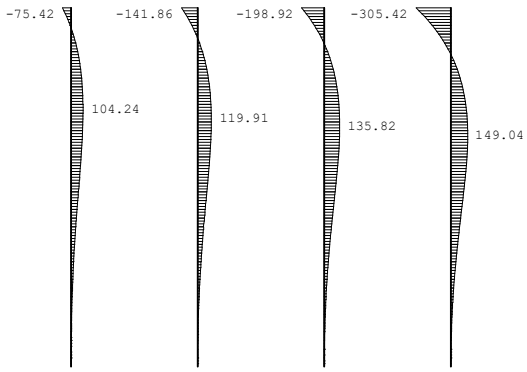


Ram: Ram 5
Uticaji u gredi: max M2= 192.30 / min M2= -204.13 kNm

Opt. 17: komb temp 7

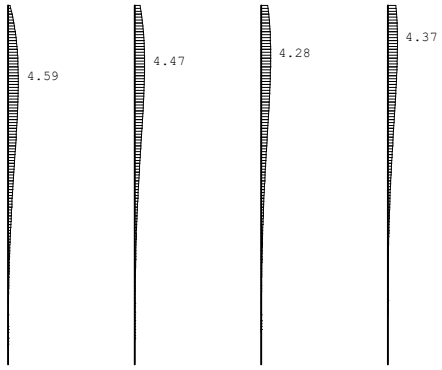
Ram: Ram 5
Uticaji u gredi: max M2= 734.45 / min M2= -1457.24 kNm

Opt. 18: komb temp 8



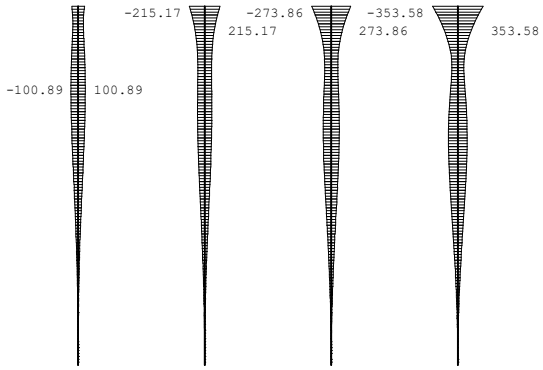
Ram: Ram 5
Uticaji u gredi: max M2= 149.04 / min M2= -305.42 kNm

Opt. 19: BU



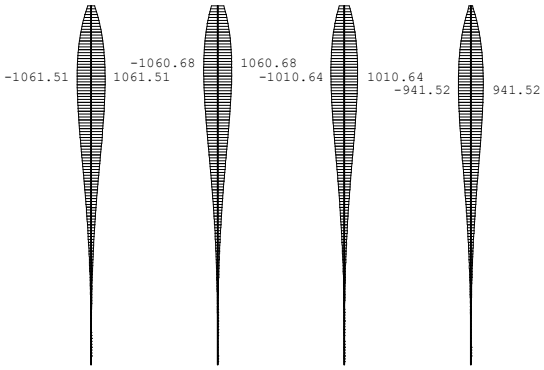
Ram: Ram 5
Uticaji u gredi: max M2= 15.74 / min M2= -3.97 kNm

Opt. 20: Sx



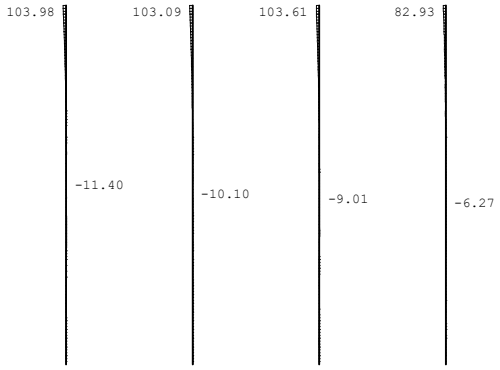
Ram: Ram 5
Uticaji u gredi: max M2= 486.75 / min M2= -486.75 kNm

Opt. 21: Sy



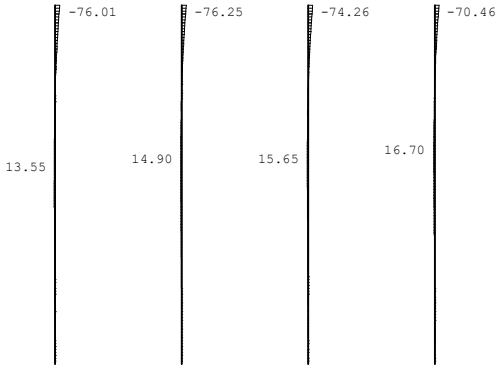
Ram: Ram 5
Uticaji u gredi: max M2= 2627.77 / min M2= -2627.77 kNm

Opt. 1: sopstvena tezina (g)



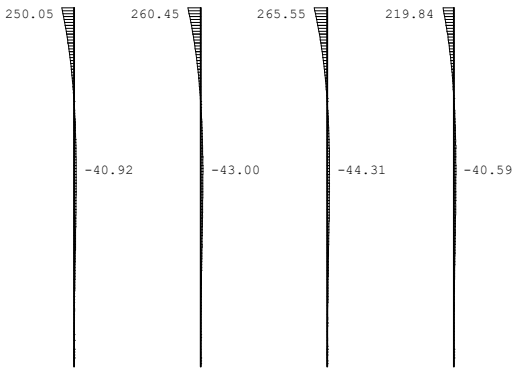
Ram: Ram 5
Uticaji u gredi: max M3= 1161.60 / min M3= -332.32 kNm

Opt. 2: mrtav teret (Δg)



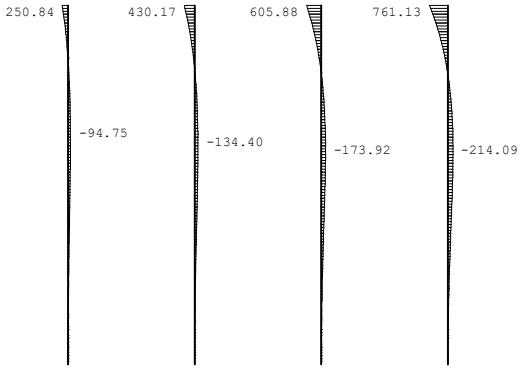
Ram: Ram 5
Uticaji u gredi: max M3= 575.12 / min M3= -112.30 kNm

Opt. 3: horizontalan pritisak tla



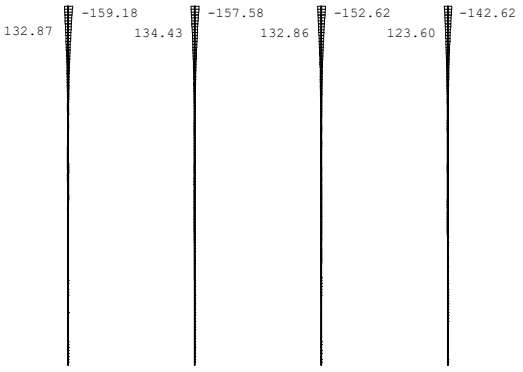
Ram: Ram 5
Uticaji u gredi: max M3= 370.68 / min M3= -706.23 kNm

Opt. 4: skupljanje



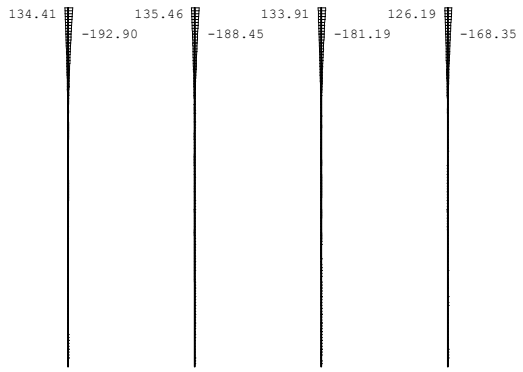
Ram: Ram 5
Uticaji u gredi: max M3= 1439.05 / min M3= -234.50 kNm

Opt. 5: LM71



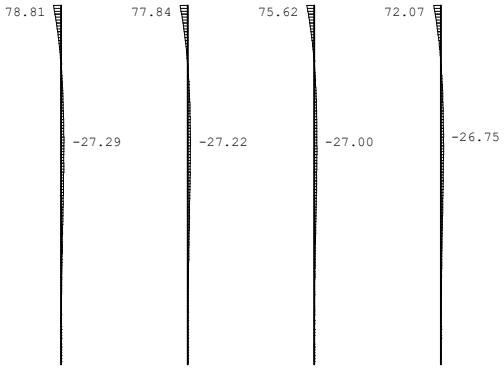
Ram: Ram 5
Uticaji u gredi: max M3= 1258.92 / min M3= -511.04 kNm

Opt. 6: SW/2



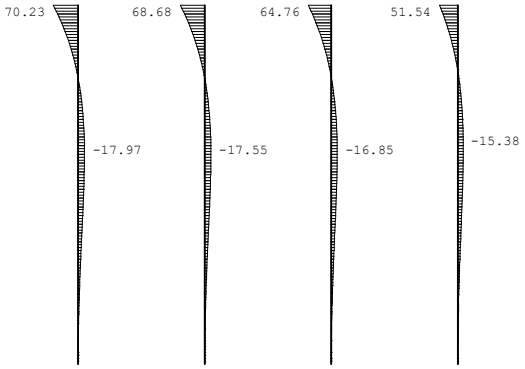
Ram: Ram 5
Uticaji u gredi: max M3= 1456.57 / min M3= -372.03 kNm

Opt. 7: KP



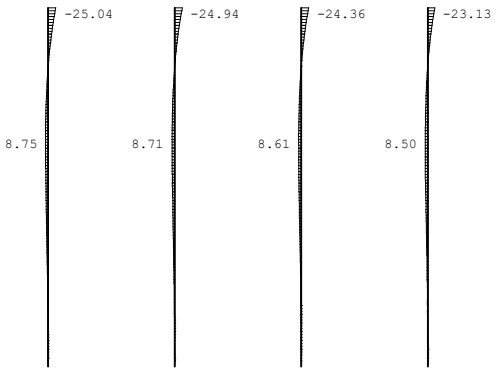
Ram: Ram 5
Uticaji u gredi: max M3= 354.40 / min M3= -38.02 kNm

Opt. 8: voz na nasipu ispred



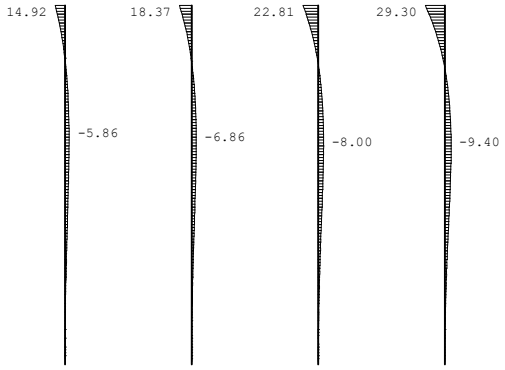
Ram: Ram 5
Uticaji u gredi: max M3= 97.89 / min M3= -28.96 kNm

Opt. 9: voz na nasipu iza



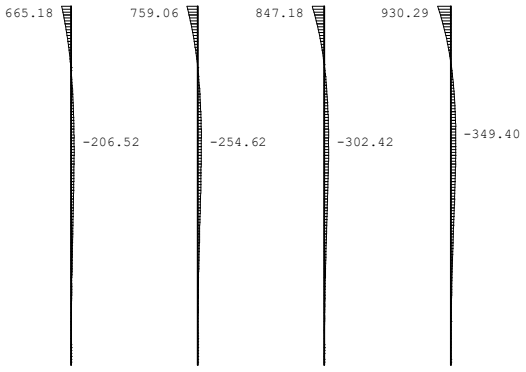
Ram: Ram 5
Uticaji u gredi: max M3= 12.36 / min M3= -114.16 kNm

Opt. 10: voz ispod



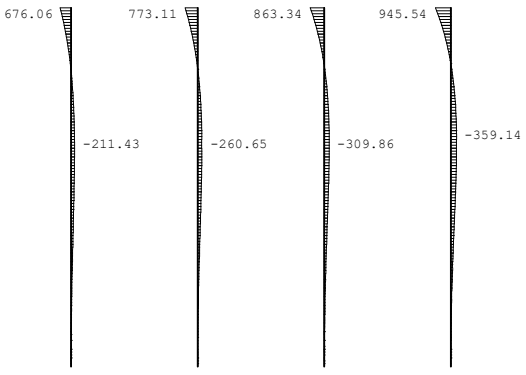
Ram: Ram 5
Uticaji u gredi: max M3= 52.09 / min M3= -12.47 kNm

Opt. 11: komb temp 1



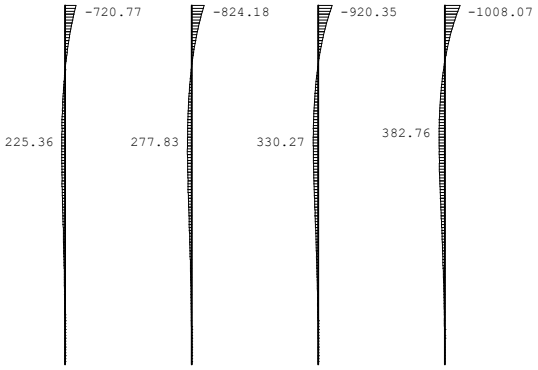
Ram: Ram 5
Uticaji u gredi: max M3= 2448.00 / min M3= -349.40 kNm

Opt. 12: komb temp 2



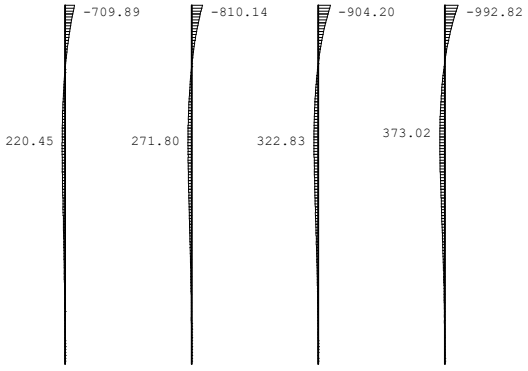
Ram: Ram 5
Uticaji u gredi: max M3= 2145.83 / min M3= -359.14 kNm

Opt. 13: komb temp 3



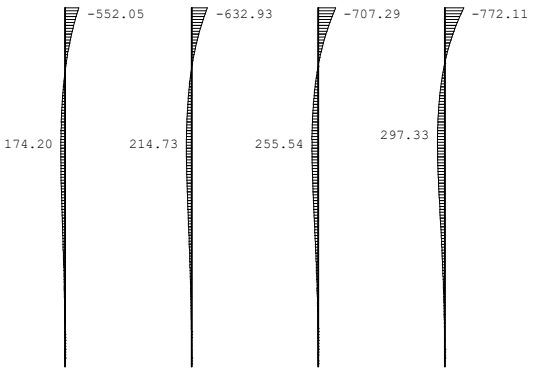
Ram: Ram 5
Uticaji u gredi: max M3= 382.76 / min M3= -2298.96 kNm

Opt. 14: komb temp 4



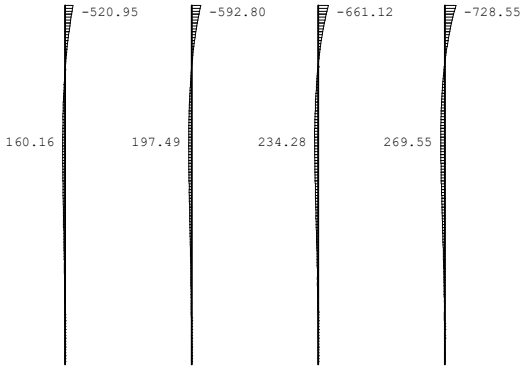
Ram: Ram 5
Uticaji u gredi: max M3= 373.02 / min M3= -2601.13 kNm

Opt. 15: komb temp 5



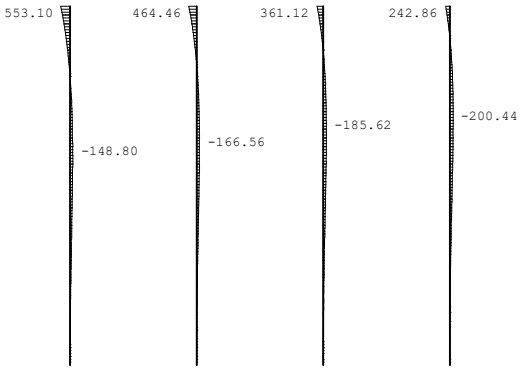
Ram: Ram 5
Uticaji u gredi: max M3= 297.33 / min M3= -1405.87 kNm

Opt. 16: komb temp 6



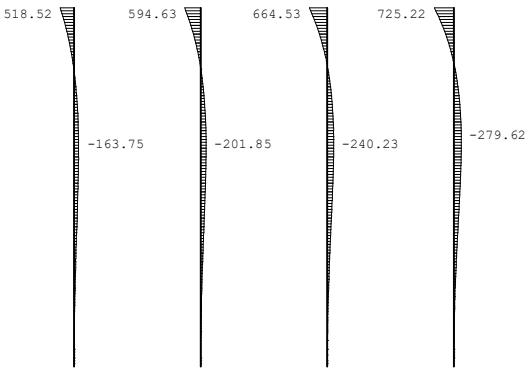
Ram: Ram 5
Uticaji u gredi: max M3= 269.55 / min M3= -2269.20 kNm

Opt. 17: komb temp 7



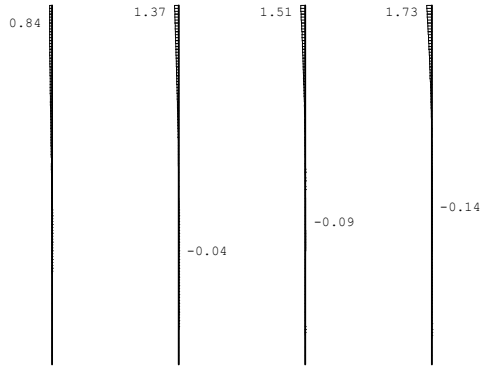
Ram: Ram 5
Uticaji u gredi: max M3= 1247.36 / min M3= -2054.43 kNm

Opt. 18: komb temp 8



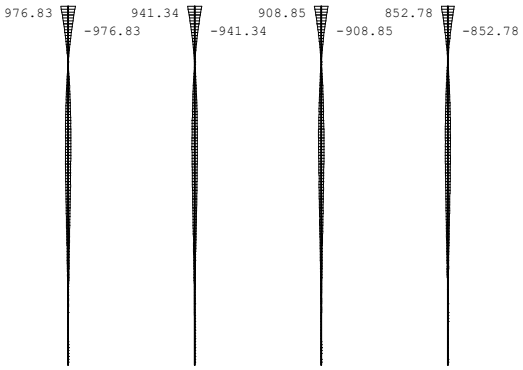
Ram: Ram 5
Uticaji u gredi: max M3= 1291.02 / min M3= -279.62 kNm

Opt. 19: BU



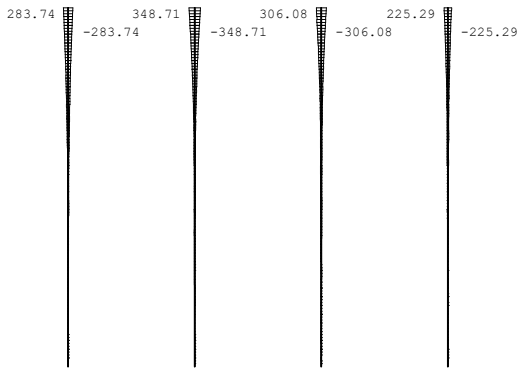
Ram: Ram 5
Uticaji u gredi: max M3= 1.73 / min M3= -11.50 kNm

Opt. 20: Sx



Ram: Ram 5
Uticaji u gredi: max M3= 4617.35 / min M3= -4617.35 kNm

Opt. 21: Sy



Ram: Ram 5
Uticaji u gredi: max M3= 2098.24 / min M3= -2098.24 kNm

Утицаји су приказани за сваки други шип, почевши од меродавног шипа за димензионисање у том раму.

Табела 16. Преглед усвојених података

Број рама	Ознака шипа	Дубина фундирања наглавне греде (m)	Дебљина наглавне греде (m)	Дужина шипа (m)	Оптерећење			
					Појединачни шип		Група шипова	
					ULS (kN)	SLS (kN)	ULS (kN)	SLS (kN)
1	1	2.80	1.50	20.00	4278	2672	22963	16614
	2	2.80	1.50	20.00	3827	2518		
	3	2.80	1.50	20.00	3483	2416		
	4	2.80	1.50	20.00	3185	2334		
	5	2.80	1.50	20.00	3011	2273		
	6	2.80	1.50	20.00	3192	2412		
	7	2.80	1.50	20.00	3502	2549		
2	8	2.80	1.50	20.00	4586	3012	57999	45660
	9	2.80	1.50	20.00	4126	2830		
	10	2.80	1.50	20.00	3766	2697		
	11	2.80	1.50	20.00	3461	2588		
	12	2.80	1.50	20.00	3301	2537		
	13	2.80	1.50	20.00	3404	2594		
	14	2.80	1.50	20.00	3610	2653		
	15	2.80	1.50	20.00	3778	2694		
	16	2.80	1.50	20.00	3839	2701		
	17	2.80	1.50	20.00	3751	2637		
	18	2.80	1.50	20.00	3598	2537		
	19	2.80	1.50	20.00	3419	2431		
	20	2.80	1.50	20.00	3239	2320		
	21	2.80	1.50	20.00	3068	2208		
	22	2.80	1.50	20.00	2907	2098		
	23	2.80	1.50	20.00	2752	1987		
	24	2.80	1.50	20.00	2590	1872		
	25	2.80	1.50	20.00	2403	1745		
	26	2.80	1.50	20.00	2171	1607		
	27	2.80	1.50	20.00	2084	1505		
	28	2.80	1.50	20.00	2155	1497		
	29	2.80	1.50	20.00	2429	1550		
3	30	2.80	1.50	20.00	2774	1682	78604	58521
	31	2.80	1.50	20.00	2365	1582		
	32	2.80	1.50	20.00	2128	1529		
	33	2.80	1.50	20.00	2117	1582		
	34	2.80	1.50	20.00	2373	1715		
	35	2.80	1.50	20.00	2558	1831		
	36	2.80	1.50	20.00	2696	1930		
	37	2.80	1.50	20.00	2802	2020		
	38	2.80	1.50	20.00	2891	2106		
	39	2.80	1.50	20.00	2973	2193		
	40	2.80	1.50	20.00	3053	2284		
	41	2.80	1.50	20.00	3151	2378		
	42	2.80	1.50	20.00	3253	2470		
	43	2.80	1.50	20.00	3347	2562		
	44	2.80	1.50	20.00	3428	2641		
	45	2.80	1.50	20.00	3486	2694		
	46	2.80	1.50	20.00	3512	2719		
	47	2.80	1.50	20.00	3500	2706		
	48	2.80	1.50	20.00	3444	2654		
	49	2.80	1.50	20.00	3342	2563		
	50	2.80	1.50	20.00	3215	2443		
	51	2.80	1.50	20.00	3033	2332		
	52	2.80	1.50	20.00	2883	2131		
	53	2.80	1.50	20.00	2689	1964		
	54	2.80	1.50	20.00	2475	1799		
	55	2.80	1.50	20.00	2230	1629		
	56	2.80	1.50	20.00	1932	1446		
	57	2.80	1.50	20.00	1856	1353		
	58	2.80	1.50	20.00	2070	1384		
	59	2.80	1.50	20.00	2455	1471		

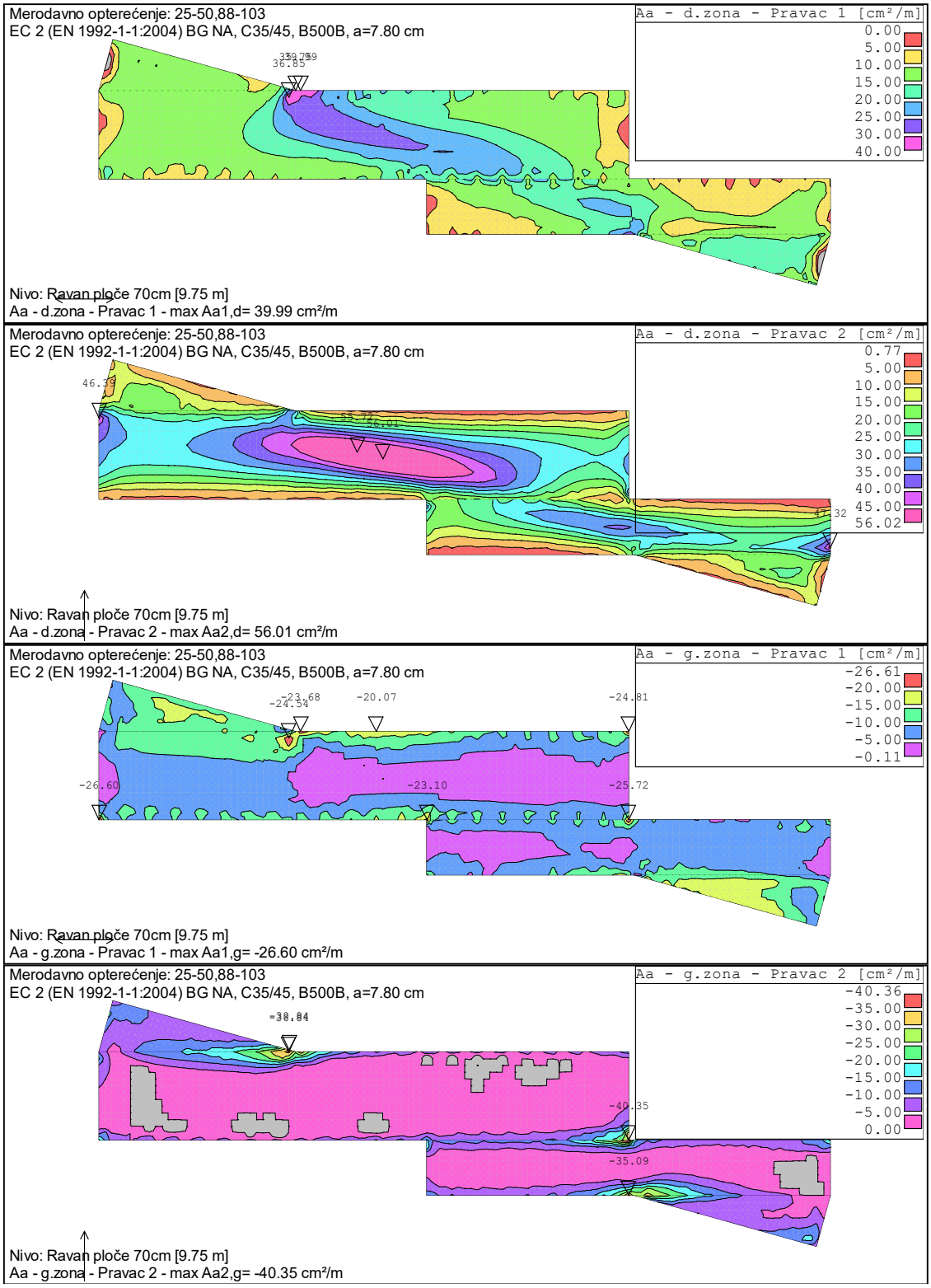
4	60	2.80	1.50	20.00	2108	1372	38664	30602
	61	2.80	1.50	20.00	1878	1322		
	62	2.80	1.50	20.00	1861	1402		
	63	2.80	1.50	20.00	2207	1585		
	64	2.80	1.50	20.00	2494	1765		
	65	2.80	1.50	20.00	2745	1931		
	66	2.80	1.50	20.00	2971	2084		
	67	2.80	1.50	20.00	3160	2216		
	68	2.80	1.50	20.00	3282	2303		
	69	2.80	1.50	20.00	3255	2302		
	70	2.80	1.50	20.00	3124	2264		
	71	2.80	1.50	20.00	2954	2216		
	72	2.80	1.50	20.00	2806	2156		
	73	2.80	1.50	20.00	2898	2200		
	74	2.80	1.50	20.00	3205	2330		
	75	2.80	1.50	20.00	3561	2476		
	76	2.80	1.50	20.00	4016	2666		
5	77	2.80	1.50	20.00	3058	2199	20243	14796
	78	2.80	1.50	20.00	2822	2098		
	79	2.80	1.50	20.00	2634	1988		
	80	2.80	1.50	20.00	2797	2075		
	81	2.80	1.50	20.00	3124	2194		
	82	2.80	1.50	20.00	3500	2337		
	83	2.80	1.50	20.00	3975	2521		

Табела 17. Преглед резултата анализе носивости и слегања за појединачан шип и групу шипова

Број рама	Дужина шипа (m)	Пречник шипа (m)	Резултати анализе				Прогнозно слегање групе шипова
			Rs (kN)	Rb (kN)	Rc (kN)	Rg (kN)	
1	20.0	1.2	4901.62	2507.06	6149.20	43044.40	21.7
2	20.0	1.2	4901.62	2507.06	6001.03	132022.66	22.9
3	20.0	1.2	4901.62	2507.06	5926.94	177808.20	20.7
4	20.0	1.2	4901.62	2507.06	6001.03	102017.51	19.8
5	20.0	1.2	4901.62	2507.06	6149.20	43044.40	19.0

5.6 ДИМЕНЗИОНИСАЊЕ

5.6.1 Плоче



Tačka 4
X=5.51 m; Y=16.15 m; Z=9.75 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.16xV+1.50xXVI
Med = 483.86 kNm [Mxy]
Ned = 136.12 kN
[Mxy] M1=467.94 M2=539.86 Mxy=-15.91 [kNm]

εb/εa = -1.463/25.000 ‰
Ad1 = 14.65 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.16xV+1.20xIX+1.50xXVI
Med = 555.04 kNm [Mxy]
Ned = 138.59 kN
[Mxy] M1=467.94 M2=539.86 Mxy=-15.91 [kNm]

εb/εa = -1.696/25.000 ‰
Ad2 = 16.55 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.16xV+1.50xXVI
Med = 467.47 kNm [Mxy]
Ned = 136.12 kN
[Mxy] M1=467.94 M2=539.86 Mxy=-15.91 [kNm]

εb/εa = -1.656/25.000 ‰
Ag1 = 11.70 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+1.16xV+1.50xXV
Med = -280.81 kNm [Mxy]
Ned = 24.33 kN
[Mxy] M1=-331.97 M2=-229.48 Mxy=-51.34 [kNm]

εb/εa = -1.152/25.000 ‰
Ag2 = 7.75 cm²/m

EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
d,pl=70.0 cm
C35/45 (γC = 1.50, γS = 1.15) [SP]
Gornja zona: B500B (a=7.8 cm)
Donja zona: B500B (a=7.8 cm)
Dimenzionisanje grupe slučajeva
opterećenja: 24-45 (NOSIVOST)

Tačka 5
X=98.55 m; Y=-11.14 m; Z=9.75 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.16xV+1.50xXVI
Med = 280.69 kNm [Mxy]
Ned = 163.11 kN
[Mxy] M1=269.14 M2=403.28 Mxy=-11.55 [kNm]

εb/εa = -1.587/25.000 ‰
Ad1 = 12.57 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.16xV+1.50xXVI
Med = 414.83 kNm [Mxy]
Ned = 70.14 kN
[Mxy] M1=269.14 M2=403.28 Mxy=-11.55 [kNm]

εb/εa = -2.291/25.000 ‰
Ad2 = 16.55 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.16xV+1.50xXVI
Med = 268.81 kNm [Mxy]
Ned = 163.11 kN
[Mxy] M1=269.14 M2=403.28 Mxy=-11.55 [kNm]

εb/εa = -2.008/25.000 ‰
Ag1 = 9.74 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+1.16xV+1.50xXV
Med = -132.91 kNm [Mxy]
Ned = 23.35 kN
[Mxy] M1=-198.13 M2=-101.52 Mxy=-31.39 [kNm]

εb/εa = -1.084/25.000 ‰
Ag2 = 5.22 cm²/m

EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
d,pl=70.0 cm
C35/45 (γC = 1.50, γS = 1.15) [SP]
Gornja zona: B500B (a=7.8 cm)
Donja zona: B500B (a=7.8 cm)
Dimenzionisanje grupe slučajeva
opterećenja: 24-45 (NOSIVOST)

Tačka 6
X=75.74 m; Y=-4.00 m; Z=9.75 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = 367.64 kNm [Mxy]
Ned = 460.78 kN
[Mxy] M1=292.25 M2=648.90 Mxy=-75.39 [kNm]

εb/εa = -1.519/25.000 ‰
Ad1 = 19.74 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = 724.28 kNm [Mxy]
Ned = 238.86 kN
[Mxy] M1=292.25 M2=648.90 Mxy=-75.39 [kNm]

εb/εa = -3.211/25.000 ‰
Ad2 = 31.06 cm²/m

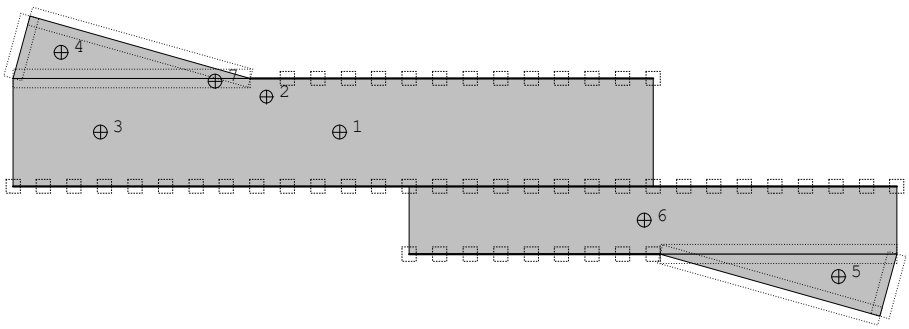
Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = 283.49 kNm [Mxy]
Ned = 460.78 kN
[Mxy] M1=292.25 M2=648.90 Mxy=-75.39 [kNm]

εb/εa = -1.472/25.000 ‰
Ag1 = 3.68 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = 0.00 kNm [Mxy]
Ned = 238.86 kN
[Mxy] M1=292.25 M2=648.90 Mxy=-75.39 [kNm]

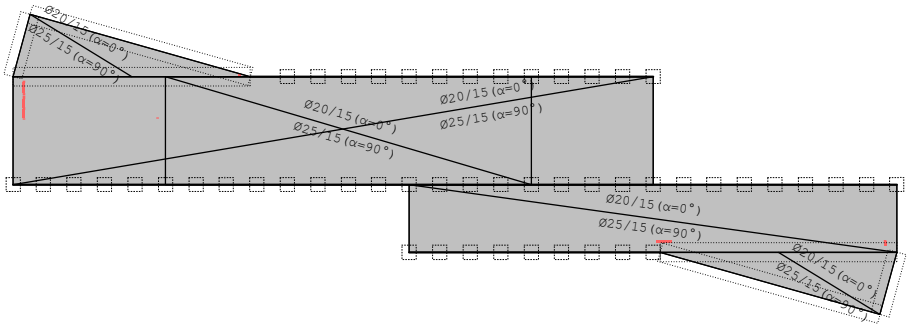
εb/εa = -0.011/25.000 ‰
Ag2 = 2.75 cm²/m

EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



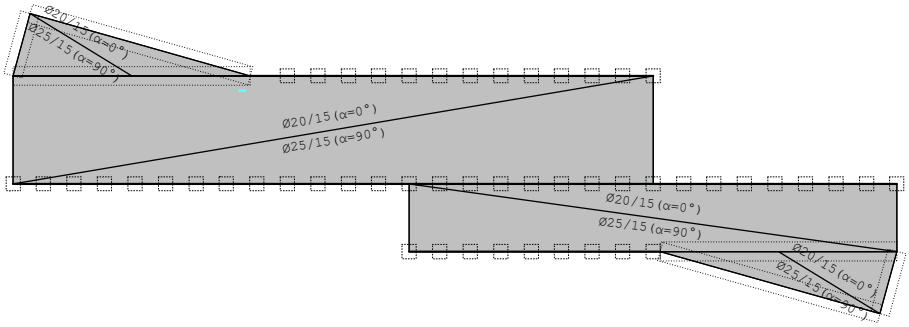
Nivo: Ravan ploče 70cm [9.75 m]
Dispozicija ploča

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Nivo: Ravan ploče 70cm [9.75 m]
Aa - d.zona

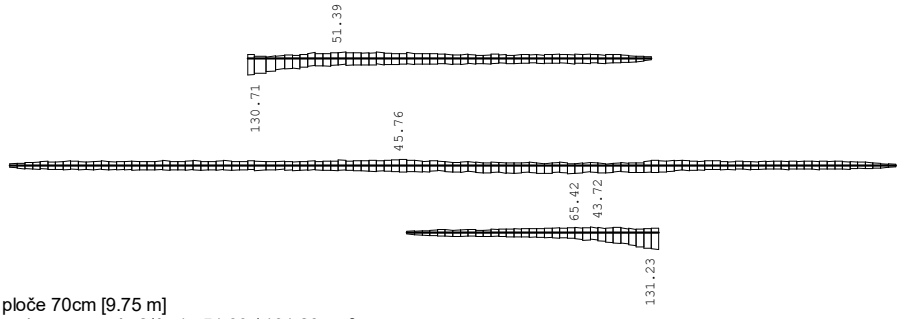
Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Nivo: Ravan ploče 70cm [9.75 m]
Aa - g.zona

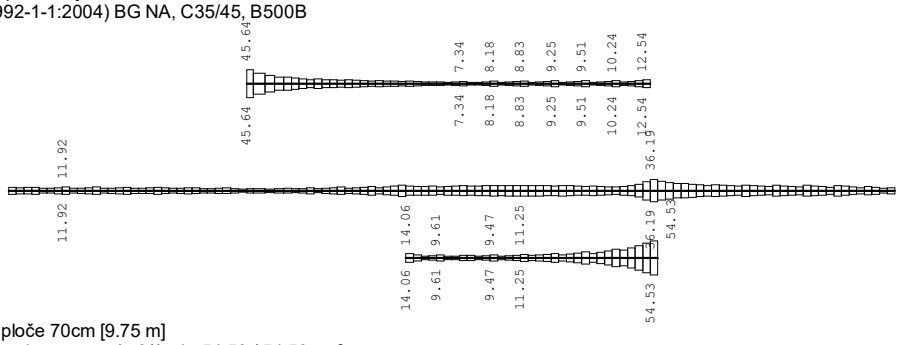
5.6.2 Греде

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



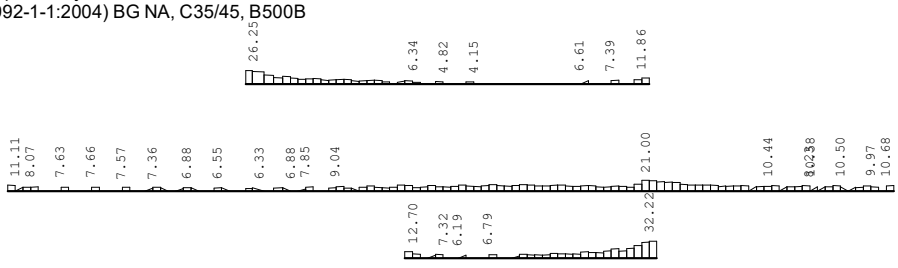
Nivo: Ravan ploče 70cm [9.75 m]
Armatura u gredama: max Aa2/Aa1= 51.39 / 131.23 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



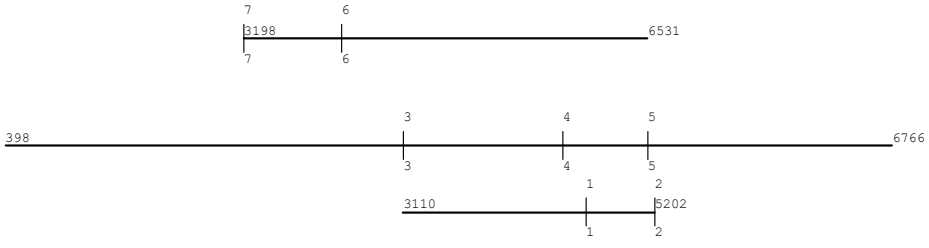
Nivo: Ravan ploče 70cm [9.75 m]
Armatura u gredama: max Aa3/Aa4= 54.53 / 54.53 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



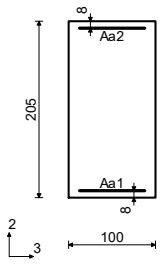
Nivo: Ravan ploče 70cm [9.75 m]
Armatura u gredama: max Aa,uz= 32.22 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



Nivo: Ravan ploče 70cm [9.75 m]
Dispozicija greda

Greda 3110-5202
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C35/45 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



[cm]

Presek 1-1 x = 21.90m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 2585.45 kN
M2ed = -3.33 kNm
M3ed = 1243.49 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.45xV+1.45xVII+0.90xXV+1.80xXX
M1ed = 739.31 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -655.25 kN
V3ed = 30.49 kN
M1ed = 691.73 kNm

Vrd,max,2 = 9072.44 kN
Vrd,max,3 = 8685.60 kN
εb/εa = -0.175/25.000 ‰

Aa1 =	44.85	+	6.28`	=	51.13 cm²
Aa2 =	37.45	+	6.28`	=	43.72 cm²
Aa3 =	0.00	+	14.12`	=	14.12 cm²
Aa4 =	0.00	+	14.12`	=	14.12 cm²

Aa,uz = 11.24 cm²/m (m=2)

`) - dodatna podužna armatura za prijem torzije.

Presek 2-2 x = 30.06m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+0.75xXX+1.00xXXI+0.30xXXII
N1ed = 4446.15 kN
M2ed = 339.06 kNm
M3ed = 4139.02 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
M1ed = 2855.11 kNm

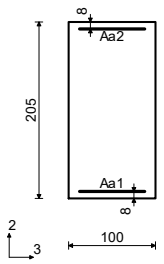
Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXV+1.80xXX
V2ed = 472.32 kN
V3ed = -261.20 kN
M1ed = 2829.20 kNm

Vrd,max,2 = 9787.20 kN
Vrd,max,3 = 9369.88 kN
εb/εa = -1.567/25.000 ‰

Aa1 =	106.99	+	24.24`	=	131.23 cm²
Aa2 =	11.23	+	24.24`	=	35.47 cm²
Aa3 =	0.00	+	54.53`	=	54.53 cm²
Aa4 =	0.00	+	54.53`	=	54.53 cm²

Aa,uz = 32.22 cm²/m (m=2)

Greda 398-6766
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C35/45 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



[cm]

Presek 3-3 x = 47.45m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 1862.73 kN
M2ed = 156.45 kNm
M3ed = -1349.99 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
M1ed = 951.78 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
V2ed = 341.41 kN
V3ed = -262.85 kN
M1ed = 951.78 kNm

Vrd,max,2 = 9619.19 kN
Vrd,max,3 = 9209.04 kN
εb/εa = -1.215/25.000 ‰

Aa1 =	45.13	+	8.08`	=	53.21 cm²
Aa2 =	37.68	+	8.08`	=	45.76 cm²
Aa3 =	0.00	+	18.18`	=	18.18 cm²
Aa4 =	0.00	+	18.18`	=	18.18 cm²

Aa,uz = 11.83 cm²/m (m=2)

`) - dodatna podužna armatura za prijem torzije.

Presek 4-4 x = 66.61m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 862.03 kN
M2ed = -34.20 kNm
M3ed = 303.22 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.45xV-1.45xVII+1.50xIX+0.90xXII
+1.80xXX
M1ed = 837.10 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.20xVI+1.80xXX
V2ed = -235.50 kN
V3ed = -29.17 kN
M1ed = 790.54 kNm

Vrd,max,2 = 9072.44 kN
Vrd,max,3 = 8685.60 kN
εb/εa = -0.557/25.000 ‰

Aa1 =	58.31	+	7.11`	=	65.42 cm²
Aa2 =	6.12	+	7.11`	=	13.23 cm²
Aa3 =	0.00	+	15.99`	=	15.99 cm²
Aa4 =	0.00	+	15.99`	=	15.99 cm²

Aa,uz = 9.52 cm²/m (m=2)

Presek 5-5 x = 76.65m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 1127.95 kN
M2ed = 189.09 kNm
M3ed = 2118.18 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
M1ed = 1547.66 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
V2ed = 826.77 kN
V3ed = -71.61 kN
M1ed = 1547.66 kNm

Vrd,max,2 = 9320.42 kN
Vrd,max,3 = 8923.00 kN
εb/εa = -1.733/25.000 ‰

Aa1 =	38.43	+	13.14`	=	51.57 cm²
Aa2 =	22.09	+	13.14`	=	35.23 cm²
Aa3 =	0.00	+	29.56`	=	29.56 cm²
Aa4 =	0.00	+	29.56`	=	29.56 cm²

Aa,uz = 21.00 cm²/m (m=2)

Presek 5-5 x = 76.65m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+0.75xXX+1.00xXXI+0.30xXXII
N1ed = 2019.90 kN
M2ed = 326.01 kNm
M3ed = 147.44 kNm

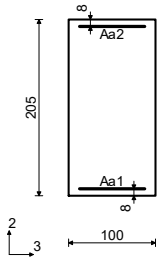
Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXV+1.80xXX
M1ed = 1894.66 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
V2ed = 56.31 kN
V3ed = -155.26 kN
M1ed = 1889.89 kNm

Vrd,max,2 = 9540.03 kN
Vrd,max,3 = 9133.24 kN
εb/εa = -2.477/25.000 ‰

Aa1 = 39.89 + 16.08` = 55.97 cm²
Aa2 = 22.93 + 16.08` = 39.01 cm²
Aa3 = 0.00 + 36.19` = 36.19 cm²
Aa4 = 0.00 + 36.19` = 36.19 cm²
Aa,uz = 19.46 cm²/m (m=2)

Greda 6531-3198
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C35/45 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



[cm]

Presek 6-6 x = 36.50m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 2568.85 kN
M2ed = 24.76 kNm
M3ed = 754.13 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.45xV-1.45xVII+1.50xIX+0.90xXII
+1.80xXX
M1ed = 591.36 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -472.61 kN
V3ed = 36.29 kN
M1ed = 568.54 kNm

Vrd,max,2 = 9072.44 kN
Vrd,max,3 = 8685.60 kN
εb/εa = -0.240/25.000 ‰
Aa1 = 38.71 + 5.02` = 43.74 cm²
Aa2 = 46.37 + 5.02` = 51.39 cm²
Aa3 = 0.00 + 11.30` = 11.30 cm²
Aa4 = 0.00 + 11.30` = 11.30 cm²
Aa,uz = 8.81 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

Presek 7-7 x = 48.22m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+0.75xXX+1.00xXXI+0.30xXXII
N1ed = 4291.29 kN
M2ed = 472.15 kNm
M3ed = 4742.56 kNm

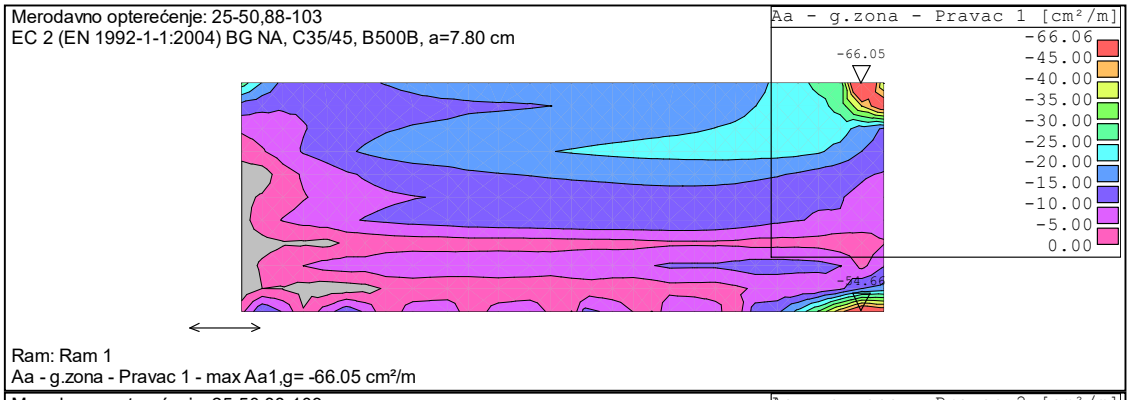
Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXV+1.80xXX
M1ed = 2389.46 kNm

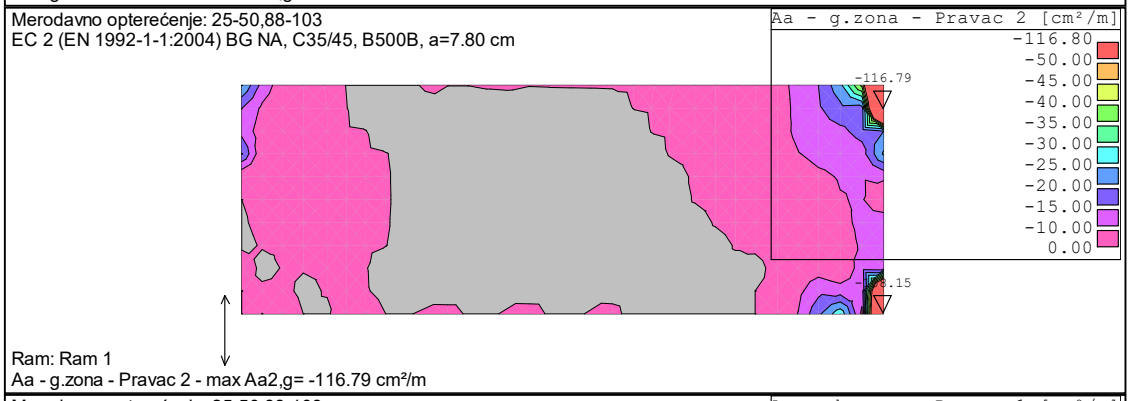
Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXV+1.80xXX
V2ed = 323.35 kN
V3ed = -329.25 kN
M1ed = 2389.46 kNm

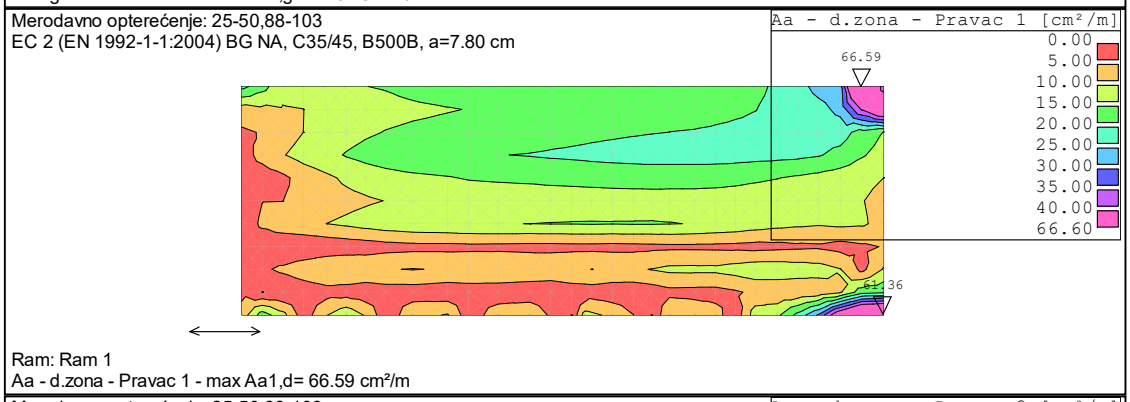
Vrd,max,2 = 9893.77 kN
Vrd,max,3 = 9471.91 kN
εb/εa = -2.987/25.000 ‰
Aa1 = 110.43 + 20.28` = 130.71 cm²
Aa2 = 11.59 + 20.28` = 31.88 cm²
Aa3 = 0.00 + 45.64` = 45.64 cm²
Aa4 = 0.00 + 45.64` = 45.64 cm²
Aa,uz = 26.25 cm²/m (m=2)

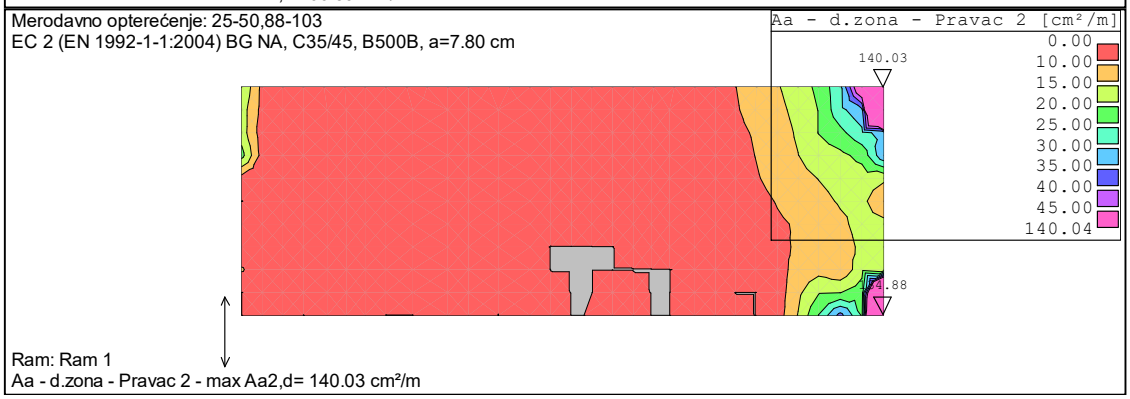
Усвојено: ***доња зона*** → ***у два реда по 11Ø28 (135.52 cm²)***
горња зона → ***један ред 11Ø28 (67.76 cm²)***
са стране → ***са обе стране по 8Ø28 (49.28 cm²)***
узенгије → ***3UØ14/15 (30.80 cm²/m').***

5.6.3 Зидови

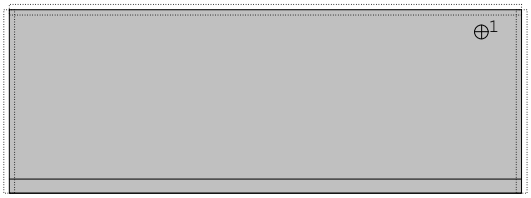

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm
Aa - g.zona - Pravac 1 [cm²/m]
-66.06
-45.00
-40.00
-35.00
-30.00
-25.00
-20.00
-15.00
-10.00
-5.00
0.00
-66.05
Ram: Ram 1
Aa - g.zona - Pravac 1 - max Aa1,g= -66.05 cm²/m


Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm
Aa - g.zona - Pravac 2 [cm²/m]
-116.80
-50.00
-45.00
-40.00
-35.00
-30.00
-25.00
-20.00
-15.00
-10.00
0.00
-116.79
Ram: Ram 1
Aa - g.zona - Pravac 2 - max Aa2,g= -116.79 cm²/m


Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm
Aa - d.zona - Pravac 1 [cm²/m]
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
66.60
66.59
Ram: Ram 1
Aa - d.zona - Pravac 1 - max Aa1,d= 66.59 cm²/m


Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm
Aa - d.zona - Pravac 2 [cm²/m]
0.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
140.04
140.03
Ram: Ram 1
Aa - d.zona - Pravac 2 - max Aa2,d= 140.03 cm²/m

EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: Ram 1
Dispozicija ploča

Ram: Ram 1
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
d,pl=100.0 cm
C35/45 (γC = 1.50, γS = 1.15) [SP]
Gornja zona: B500B (a=7.8 cm)
Donja zona: B500B (a=7.8 cm)
Dimenzionisanje grupe slučajeva opterećenja: 24-45 (NOSIVOST)

Tačka 1
X=26.65 m; Y=13.25 m; Z=8.77 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = 7.85 kNm [Mxy]
Ned = 2308.67 kN
[Mxy] M1=-12.89 M2=317.11 Mxy=20.74 [kNm]

εb/εa = 0.038/25.000 ‰
Ad1 = 26.76 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.30xX
+0.50xXIV+1.00xXX+0.30xXXI
Med = 367.95 kNm [Mxy]
Ned = 1605.30 kN
[Mxy] M1=-12.89 M2=317.11 Mxy=20.74 [kNm]

εb/εa = -0.986/25.000 ‰
Ad2 = 27.97 cm²/m

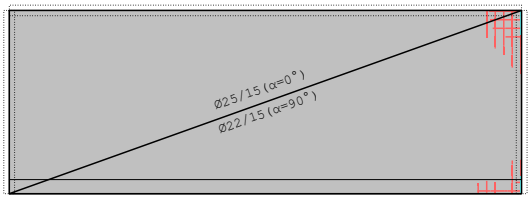
Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = -14.24 kNm [Mxy]
Ned = 2308.67 kN
[Mxy] M1=-12.89 M2=317.11 Mxy=20.74 [kNm]

εb/εa = -0.015/25.000 ‰
Ag1 = 26.94 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.30xX
+0.50xXIV+1.00xXX+0.30xXXI
Med = 0.00 kNm [Mxy]
Ned = 1605.30 kN
[Mxy] M1=-19.43 M2=351.66 Mxy=-17.79 [kNm]

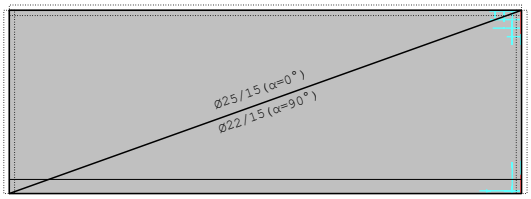
εb/εa = 0.053/25.000 ‰
Ag2 = 18.46 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



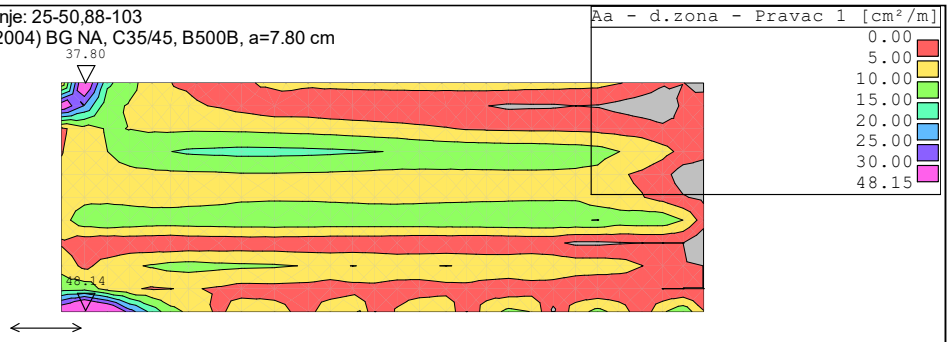
Ram: Ram 1
Aa - d.zona

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



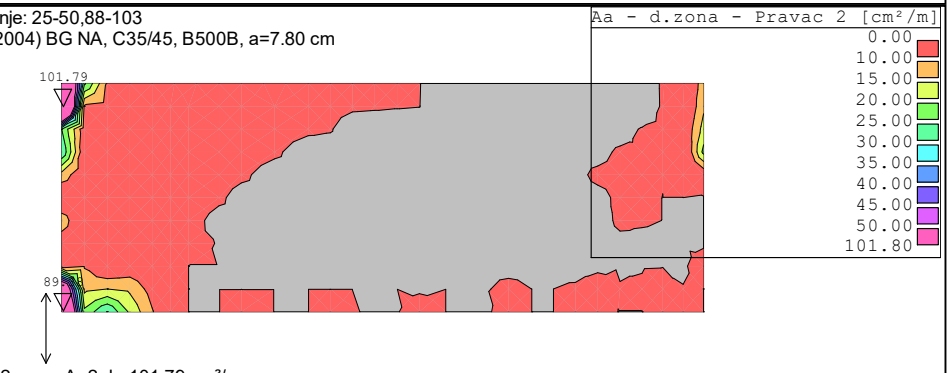
Ram: Ram 1
Aa - g.zona

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



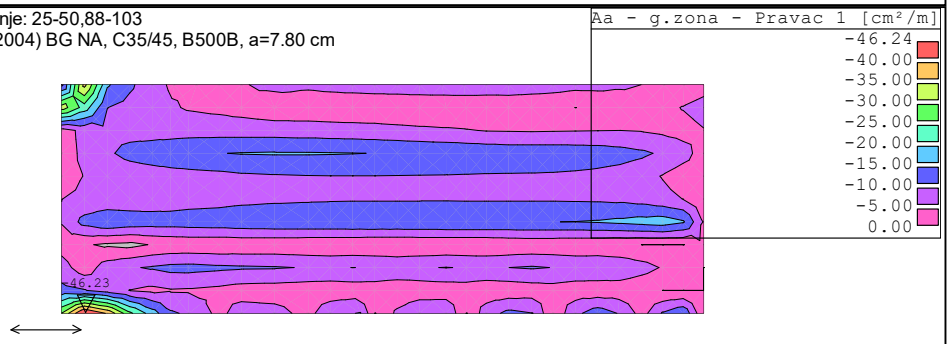
Ram: Ram 5
Aa - d.zona - Pravac 1 - max Aa1,d= 48.14 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



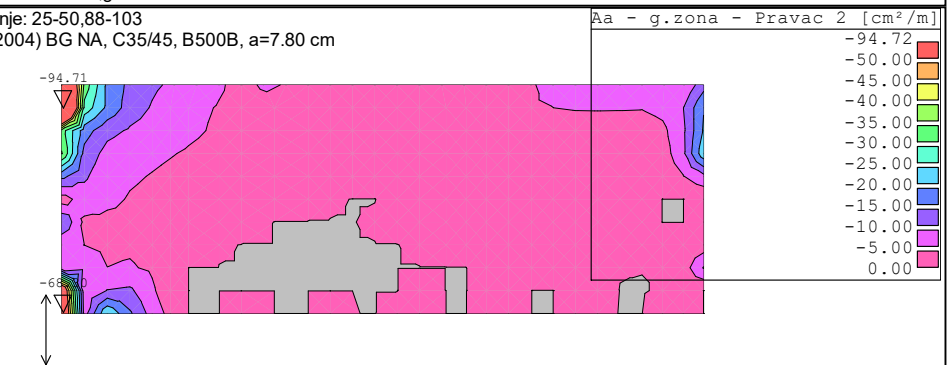
Ram: Ram 5
Aa - d.zona - Pravac 2 - max Aa2,d= 101.79 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



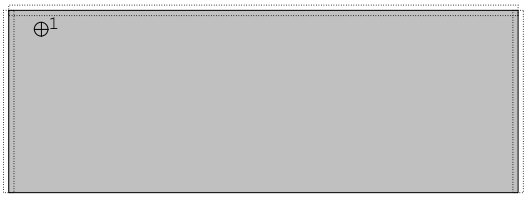
Ram: Ram 5
Aa - g.zona - Pravac 1 - max Aa1,g= -46.23 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: Ram 5
Aa - g.zona - Pravac 2 - max Aa2,g= -94.71 cm²/m

EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: Ram 5
Dispozicija ploča

Ram: Ram 5
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
d,pl=100.0 cm
C35/45 (γC = 1.50, γS = 1.15) [SP]
Gornja zona: B500B (a=7.8 cm)
Donja zona: B500B (a=7.8 cm)
Dimenzionisanje grupe slučajeva opterećenja: 24-45 (NOSIVOST)

Tačka 1
X=79.37 m; Y=-8.52 m; Z=8.77 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = 105.70 kNm [Mxy]
Ned = 916.28 kN
[Mxy] M1=29.12 M2=54.49 Mxy=76.58 [kNm]

εb/εa = -0.525/25.000 ‰
Ad1 = 13.24 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.00xXX+0.30xXXI
Med = 221.38 kNm [Mxy]
Ned = 298.88 kN
[Mxy] M1=29.12 M2=54.49 Mxy=76.58 [kNm]

εb/εa = -1.014/25.000 ‰
Ad2 = 8.93 cm²/m

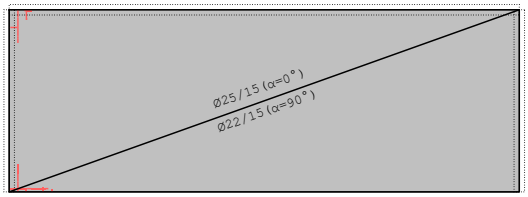
Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = -47.46 kNm [Mxy]
Ned = 916.28 kN
[Mxy] M1=29.12 M2=54.49 Mxy=76.58 [kNm]

εb/εa = -0.299/25.000 ‰
Ag1 = 11.77 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV
Med = -590.44 kNm [Mxy]
Ned = 121.66 kN
[Mxy] M1=-7.45 M2=-432.06 Mxy=-158.38 [kNm]

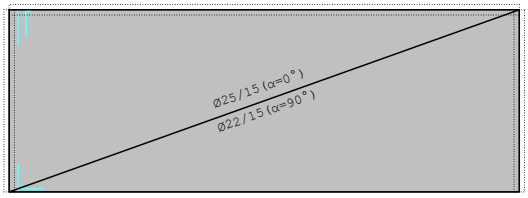
εb/εa = -1.767/25.000 ‰
Ag2 = 16.35 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm

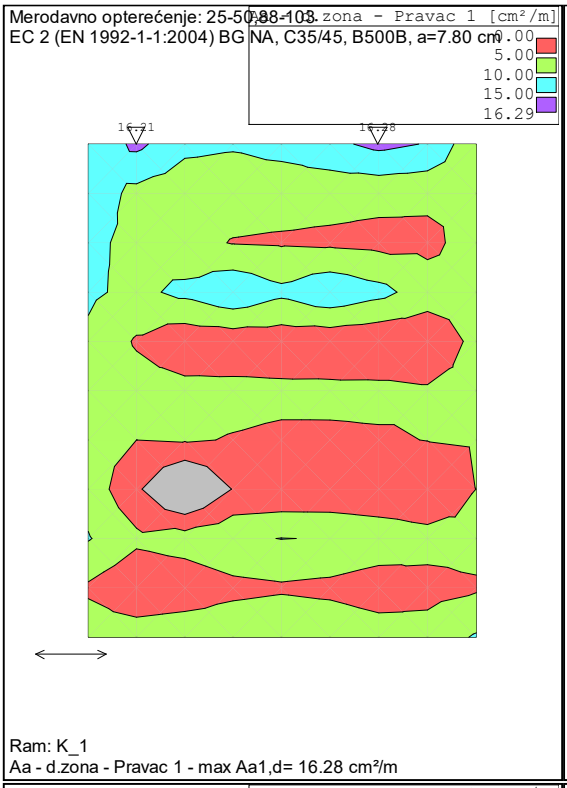


Ram: Ram 5
Aa - d.zona

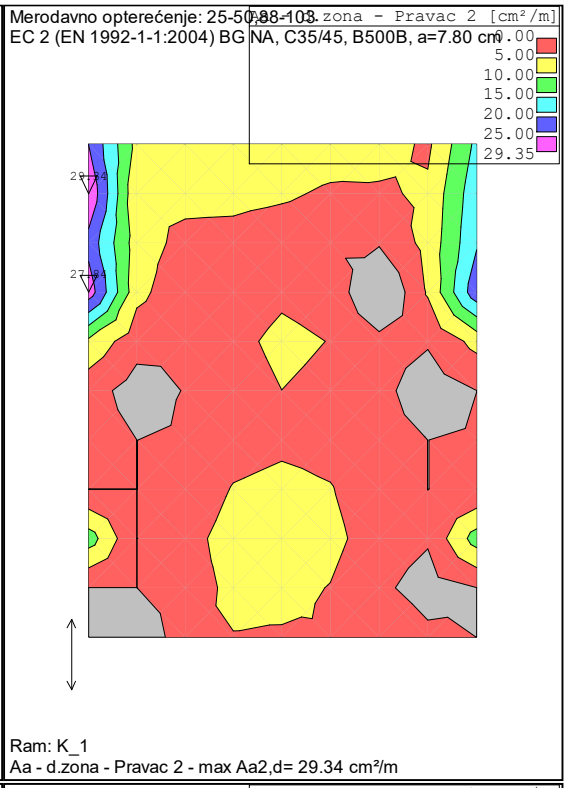
Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



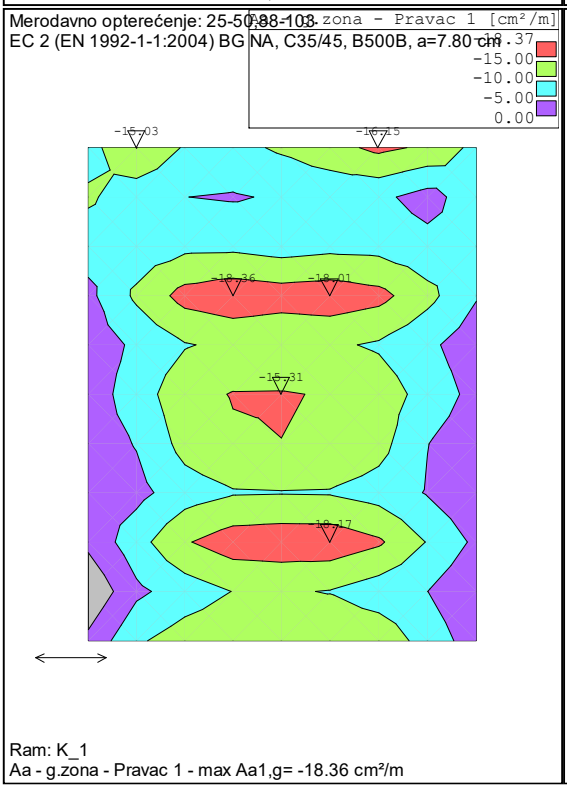
Ram: Ram 5
Aa - g.zona



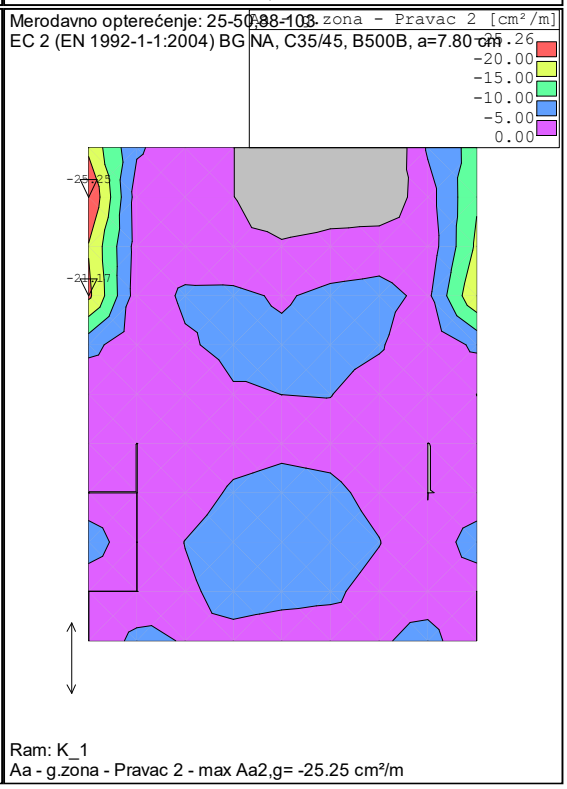
Ram: K_1
Aa - d.zona - Pravac 1 - max Aa1,d= 16.28 cm²/m



Ram: K_1
Aa - d.zona - Pravac 2 - max Aa2,d= 29.34 cm²/m

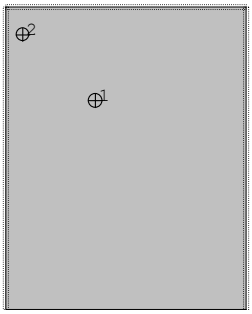


Ram: K_1
Aa - g.zona - Pravac 1 - max Aa1,g= -18.36 cm²/m



Ram: K_1
Aa - g.zona - Pravac 2 - max Aa2,g= -25.25 cm²/m

EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: K_1
Dispozicija ploča

Ram: K_1
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
d,pl=100.0 cm
C35/45 (γC = 1.50, γS = 1.15) [SP]
Gornja zona: B500B (a=7.8 cm)
Donja zona: B500B (a=7.8 cm)
Dimenzionisanje grupe slučajeva opterećenja: 24-45 (NOSIVOST)

Tačka 1
X=0.77 m; Y=15.50 m; Z=6.82 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = -156.97 kNm [Mxy]
Ned = 882.81 kN
[Mxy] M1=-172.72 M2=-174.26 Mxy=52.39 [kNm]

εb/εa = -0.696/25.000 ‰
Ad1 = 14.21 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
Med = -173.54 kNm [Mxy]
Ned = -93.41 kN
[Mxy] M1=-172.72 M2=-174.26 Mxy=52.39 [kNm]

εb/εa = -1.019/25.000 ‰
Ad2 = 3.13 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
Med = -296.77 kNm [Mxy]
Ned = 944.89 kN
[Mxy] M1=-222.75 M2=-198.14 Mxy=74.02 [kNm]

εb/εa = -1.008/25.000 ‰
Ag1 = 18.42 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
Med = -272.15 kNm [Mxy]
Ned = -93.41 kN
[Mxy] M1=-222.75 M2=-198.14 Mxy=74.02 [kNm]

εb/εa = -1.271/25.000 ‰
Ag2 = 5.59 cm²/m

Tačka 2
X=0.26 m; Y=13.67 m; Z=8.77 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = 128.76 kNm [Mxy]
Ned = 490.76 kN
[Mxy] M1=33.79 M2=88.48 Mxy=94.96 [kNm]

εb/εa = -0.701/25.000 ‰
Ad1 = 8.86 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.30xX
+0.50xXIV+1.00xXX+0.30xXXI
Med = 179.05 kNm [Mxy]
Ned = 127.20 kN
[Mxy] M1=33.79 M2=88.48 Mxy=94.96 [kNm]

εb/εa = -0.958/25.000 ‰
Ad2 = 5.85 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = -61.17 kNm [Mxy]
Ned = 490.76 kN
[Mxy] M1=33.79 M2=88.48 Mxy=94.96 [kNm]

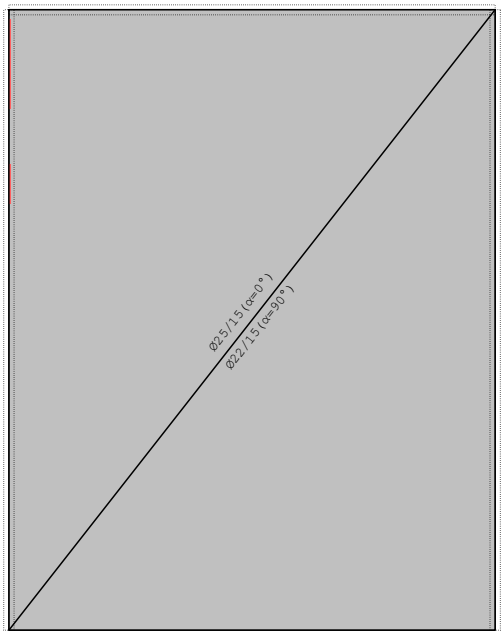
εb/εa = -0.449/25.000 ‰
Ag1 = 7.18 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.50xXVI
+1.00xXX+0.30xXXI
Med = -68.73 kNm [Mxy]
Ned = 96.60 kN
[Mxy] M1=36.64 M2=48.09 Mxy=116.81 [kNm]

εb/εa = -0.588/25.000 ‰
Ag2 = 2.77 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm

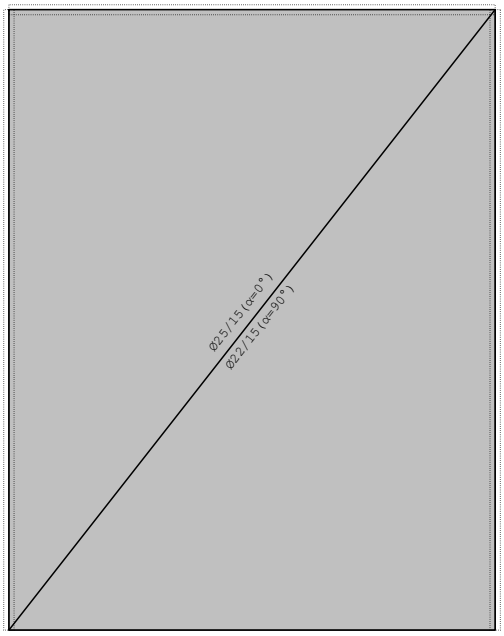
Aa - d.zona [cm²/m]
0.00
14.47
28.94



Ram: K_1
Aa - d.zona

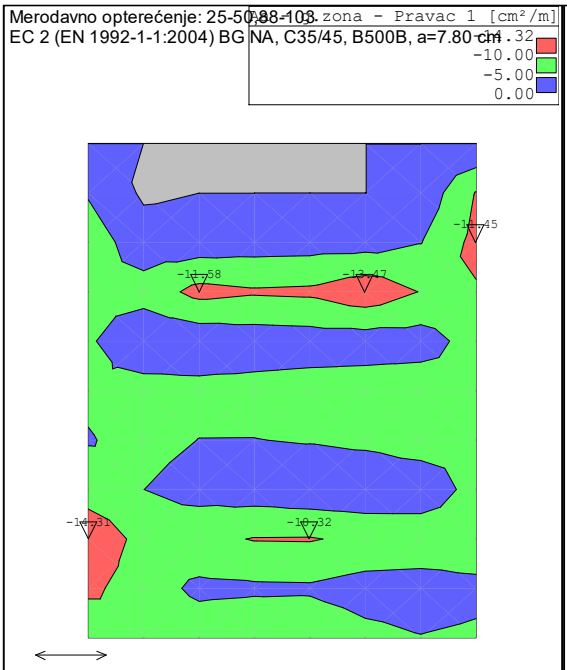
Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm

Aa - g.zona [cm²/m]
-24.84
-12.42
0.00



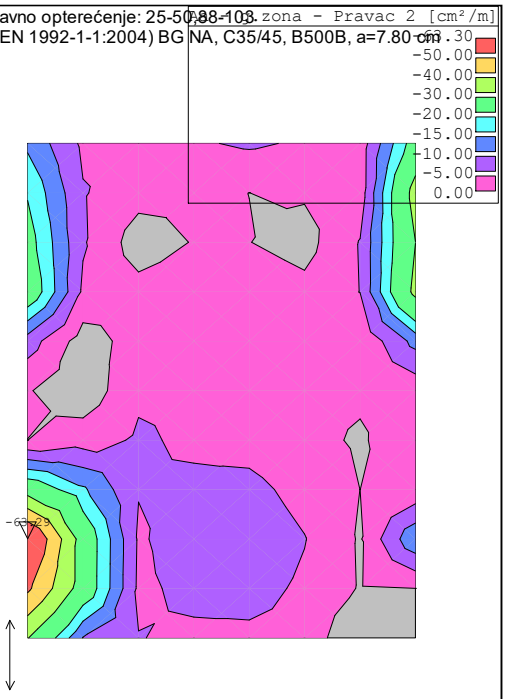
Ram: K_1
Aa - g.zona

Merodavno opterećenje: 25-50-88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



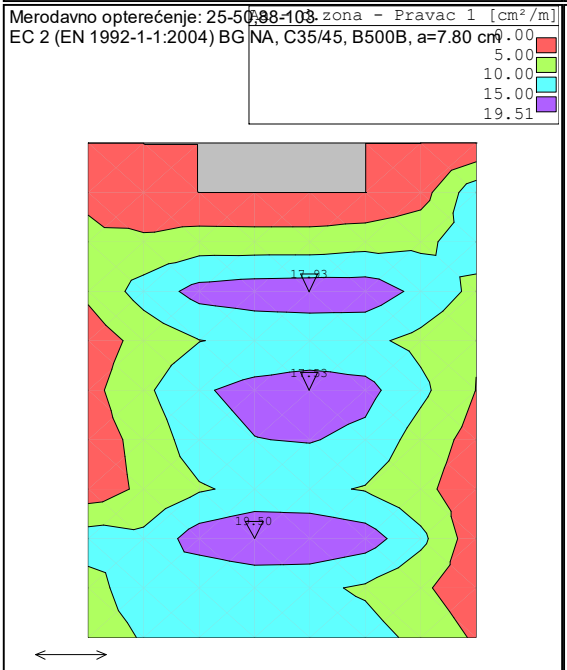
Ram: K_2
Aa - g.zona - Pravac 1 - max Aa1,g= -14.31 cm²/m

Merodavno opterećenje: 25-50-88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



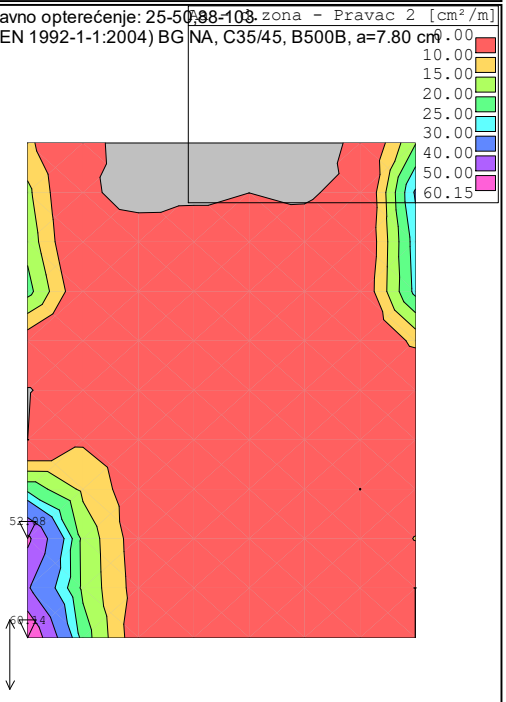
Ram: K_2
Aa - g.zona - Pravac 2 - max Aa2,g= -63.29 cm²/m

Merodavno opterećenje: 25-50-88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



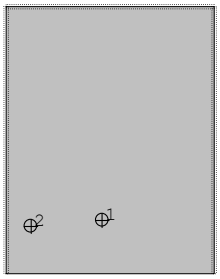
Ram: K_2
Aa - d.zona - Pravac 1 - max Aa1,d= 19.50 cm²/m

Merodavno opterećenje: 25-50-88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: K_2
Aa - d.zona - Pravac 2 - max Aa2,d= 60.14 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: K_2
Dispozicija ploča

Ram: K_2
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
d,pl=100.0 cm
C35/45 (γC = 1.50, γS = 1.15) [SP]
Gornja zona: B500B (a=7.8 cm)
Donja zona: B500B (a=7.8 cm)
Dimenzionisanje grupe slučajeva opterećenja: 24-45 (NOSIVOST)

Tačka 1
X=104.68 m; Y=-12.19 m; Z=1.95 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV +1.16xV+1.16xVII+1.50xXIII
Med = 359.45 kNm [Mxy]
Ned = 869.43 kN
[Mxy] M1=327.33 M2=234.33 Mxy=32.12 [kNm]

εb/εa = -1.144/25.000 ‰
Ad1 = 19.15 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV +1.16xV+1.16xVII+1.50xXIII
Med = 266.45 kNm [Mxy]
Ned = 186.89 kN
[Mxy] M1=327.33 M2=234.33 Mxy=32.12 [kNm]

εb/εa = -1.157/25.000 ‰
Ad2 = 8.76 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV +1.16xV+1.16xVII+1.50xXIII
Med = 0.00 kNm [Mxy]
Ned = 869.43 kN
[Mxy] M1=327.33 M2=234.33 Mxy=32.12 [kNm]

εb/εa = 0.053/25.000 ‰
Ag1 = 10.00 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV +1.16xV+1.16xVII+1.50xXIII
Med = 231.17 kNm [Mxy]
Ned = 186.89 kN
[Mxy] M1=327.33 M2=234.33 Mxy=32.12 [kNm]

εb/εa = -1.074/25.000 ‰
Ag2 = 7.83 cm²/m

Tačka 2
X=104.10 m; Y=-14.29 m; Z=1.95 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV +1.16xV+1.16xVII+1.50xXIII
Med = 207.86 kNm [Mxy]
Ned = 503.63 kN
[Mxy] M1=121.62 M2=209.08 Mxy=86.24 [kNm]

εb/εa = -0.920/25.000 ‰
Ad1 = 11.00 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV +0.30xV-0.30xVII+0.30xVIII+0.50xXVII +1.00xXX+0.30xXXI
Med = 0.00 kNm [Mxy]
Ned = 1345.99 kN
[Mxy] M1=121.62 M2=209.08 Mxy=86.24 [kNm]

εb/εa = 0.053/25.000 ‰
Ad2 = 15.55 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV +1.16xV+1.16xVII+1.50xXIII
Med = 86.05 kNm [Mxy]
Ned = 503.63 kN
[Mxy] M1=121.62 M2=209.08 Mxy=86.24 [kNm]

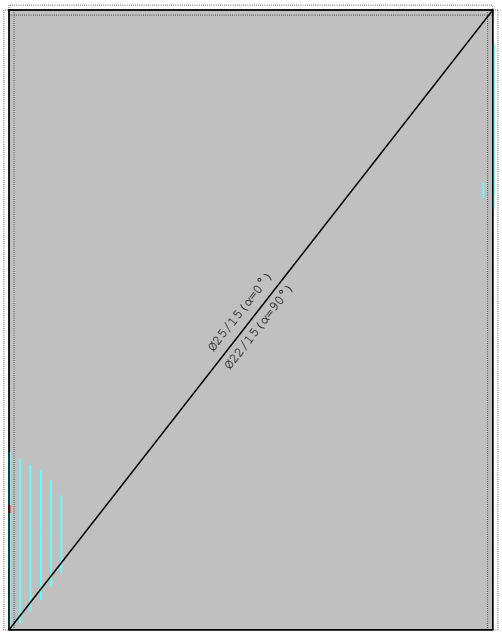
εb/εa = -0.547/25.000 ‰
Ag1 = 7.91 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV +0.30xV-0.30xVII+0.30xVIII+0.50xXVII +1.00xXX+0.30xXXI
Med = -204.10 kNm [Mxy]
Ned = 1345.99 kN
[Mxy] M1=117.22 M2=-189.68 Mxy=41.10 [kNm]

εb/εa = -0.720/25.000 ‰
Ag2 = 20.73 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm

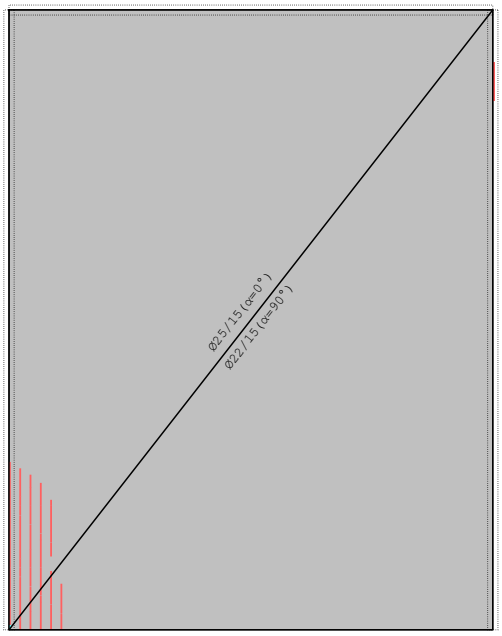
Aa - g.zona [cm²/m]
-52.74
-26.37
0.00



Ram: K_2
Aa - g.zona

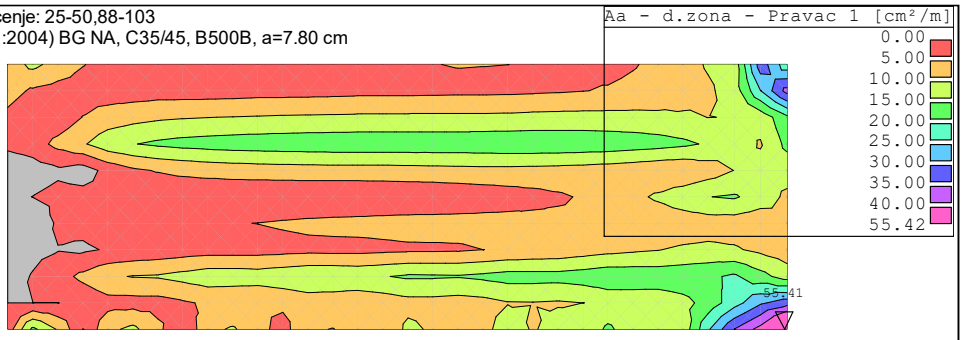
Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm

Aa - d.zona [cm²/m]
0.00
26.69
53.38



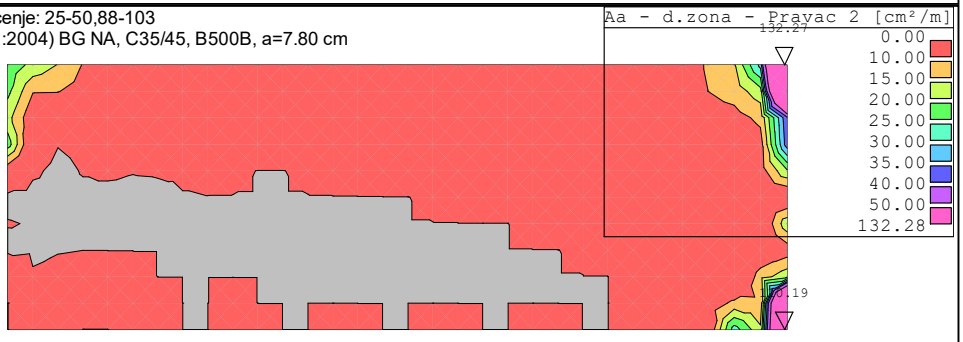
Ram: K_2
Aa - d.zona

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



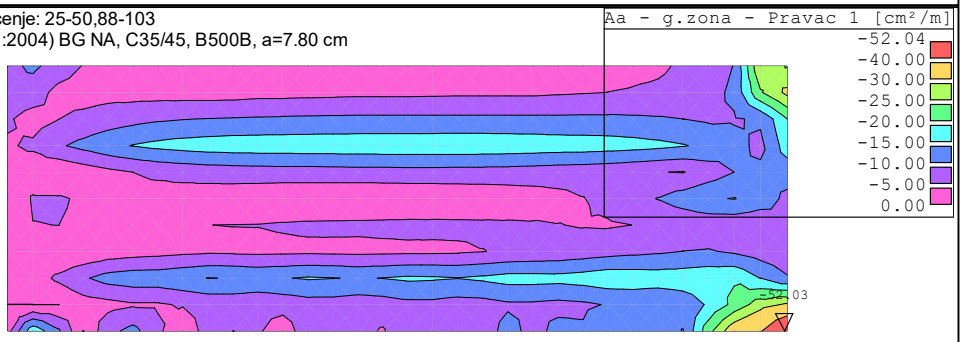
Ram: Ram 2
Aa - d.zona - Pravac 1 - max Aa1,d= 55.41 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



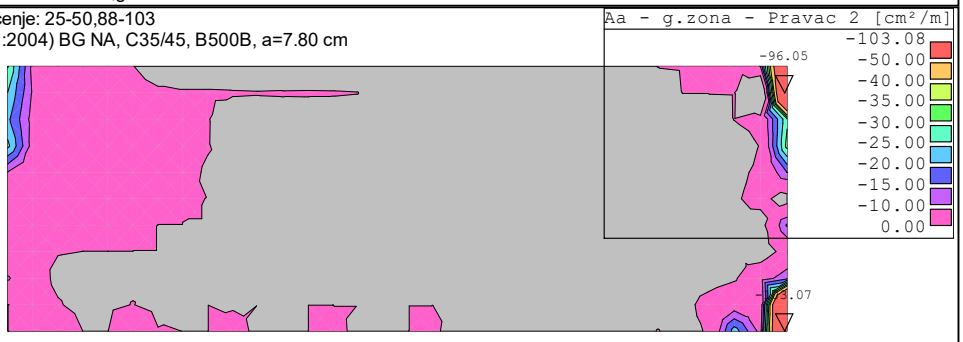
Ram: Ram 2
Aa - d.zona - Pravac 2 - max Aa2,d= 132.27 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



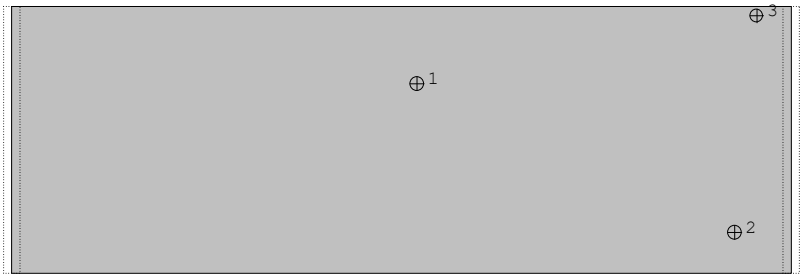
Ram: Ram 2
Aa - g.zona - Pravac 1 - max Aa1,g= -52.03 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: Ram 2
Aa - g.zona - Pravac 2 - max Aa2,g= -103.07 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: Ram 2
Dispozicija ploča

Ram: Ram 2
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
d,pl=100.0 cm
C35/45 (γC = 1.50, γS = 1.15) [SP]
Gornja zona: B500B (a=7.8 cm)
Donja zona: B500B (a=7.8 cm)
Dimenzionisanje grupe slučajeva opterećenja: 24-45 (NOSIVOST)

Tačka 1
X=14.60 m; Y=12.75 m; Z=6.82 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = -6.22 kNm [Mxy]
Ned = 1579.41 kN
[Mxy] M1=-6.78 M2=-56.18 Mxy=5.61 [kNm]

εb/εa = 0.009/25.000 ‰
Ad1 = 18.42 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.00xXX+0.30xXXI
Med = 196.78 kNm [Mxy]
Ned = -268.21 kN
[Mxy] M1=-6.78 M2=-56.18 Mxy=5.61 [kNm]

εb/εa = -1.150/25.000 ‰
Ad2 = 1.63 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = -12.38 kNm [Mxy]
Ned = 1579.41 kN
[Mxy] M1=-6.78 M2=-56.18 Mxy=5.61 [kNm]

εb/εa = -0.032/25.000 ‰
Ag1 = 18.50 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.45xV
Med = 0.00 kNm [Mxy]
Ned = -481.26 kN
[Mxy] M1=11.94 M2=48.66 Mxy=-13.19 [kNm]

Ag2 = 0.00 cm²/m

Tačka 2
X=26.51 m; Y=12.75 m; Z=1.95 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.30xX
+0.50xXIV+1.00xXX+0.30xXXI
Med = 60.58 kNm [Mxy]
Ned = 1693.55 kN
[Mxy] M1=19.31 M2=147.55 Mxy=41.27 [kNm]

εb/εa = -0.238/25.000 ‰
Ad1 = 21.09 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+1.16xV+1.50xXV
Med = 213.35 kNm [Mxy]
Ned = -373.40 kN
[Mxy] M1=19.31 M2=147.55 Mxy=41.27 [kNm]

εb/εa = -1.238/25.000 ‰
Ad2 = 0.80 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.30xX
+0.50xXIV+1.00xXX+0.30xXXI
Med = 7.77 kNm [Mxy]
Ned = 1693.55 kN
[Mxy] M1=19.31 M2=147.55 Mxy=41.27 [kNm]

εb/εa = 0.025/25.000 ‰
Ag1 = 19.59 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.45xV
Med = 0.00 kNm [Mxy]
Ned = -669.68 kN
[Mxy] M1=46.94 M2=143.98 Mxy=3.18 [kNm]

Ag2 = 0.00 cm²/m

Tačka 3
X=27.47 m; Y=12.75 m; Z=9.75 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.00xXX+0.30xXXI
Med = 157.30 kNm [Mxy]
Ned = 2547.81 kN
[Mxy] M1=54.56 M2=623.72 Mxy=102.73 [kNm]

εb/εa = -0.421/25.000 ‰
Ad1 = 33.47 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXIII
Med = 1156.54 kNm [Mxy]
Ned = 14.56 kN
[Mxy] M1=54.56 M2=623.72 Mxy=102.73 [kNm]

εb/εa = -2.478/25.000 ‰
Ad2 = 30.19 cm²/m

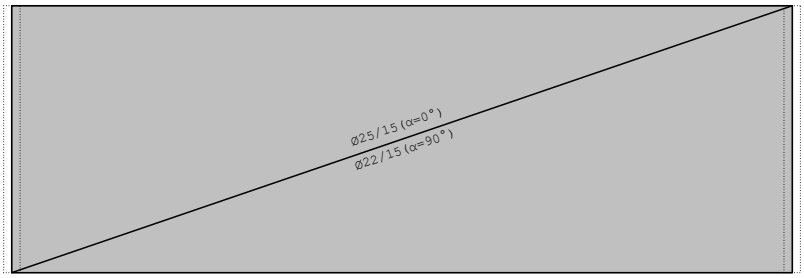
Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.00xXX+0.30xXXI
Med = 37.64 kNm [Mxy]
Ned = 2547.81 kN
[Mxy] M1=54.56 M2=623.72 Mxy=102.73 [kNm]

εb/εa = -0.081/25.000 ‰
Ag1 = 30.17 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.00xXX+0.30xXXI
Med = 0.00 kNm [Mxy]
Ned = 905.90 kN
[Mxy] M1=54.56 M2=623.72 Mxy=102.73 [kNm]

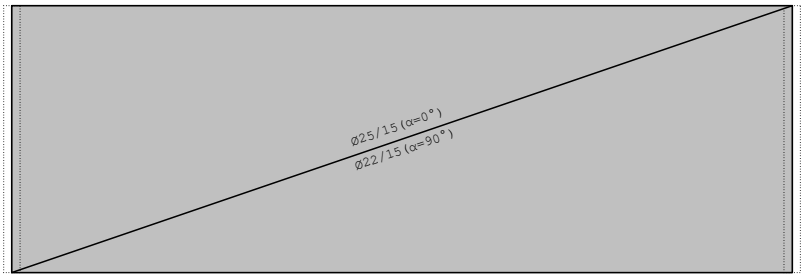
εb/εa = 0.053/25.000 ‰
Ag2 = 10.42 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



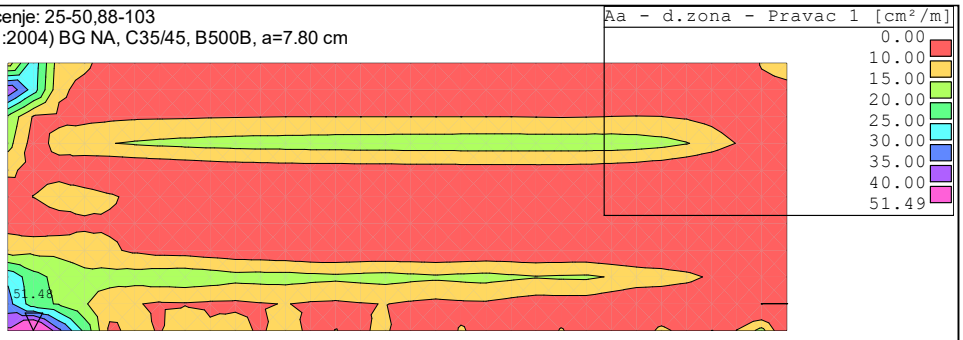
Ram: Ram 2
Aa - d.zona

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



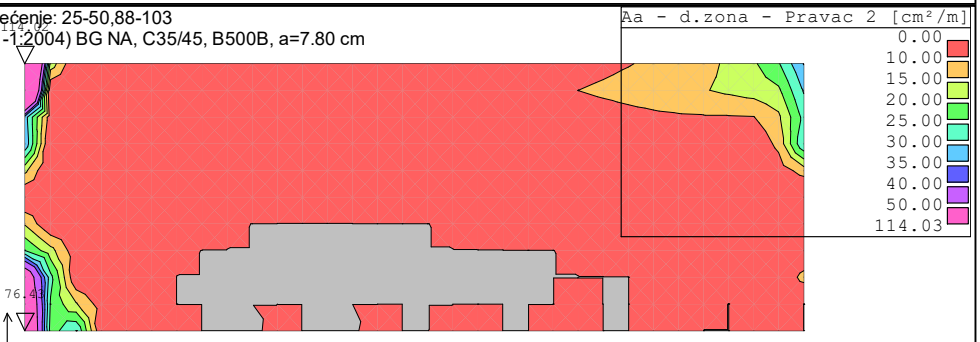
Ram: Ram 2
Aa - g.zona

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



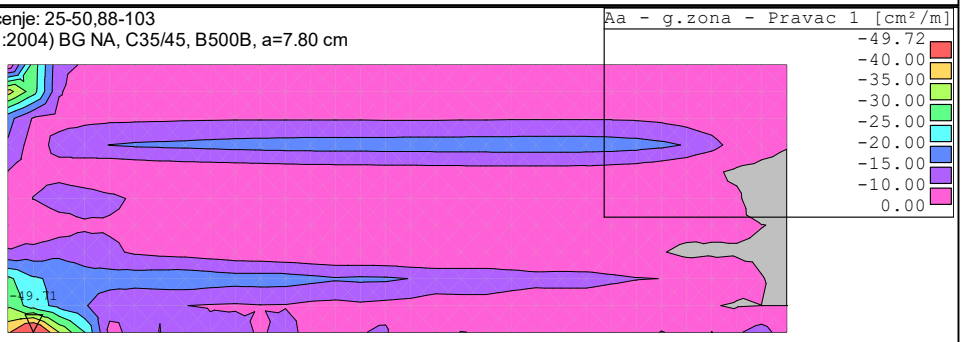
Ram: Ram 4
Aa - d.zona - Pravac 1 - max Aa1,d= 51.48 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



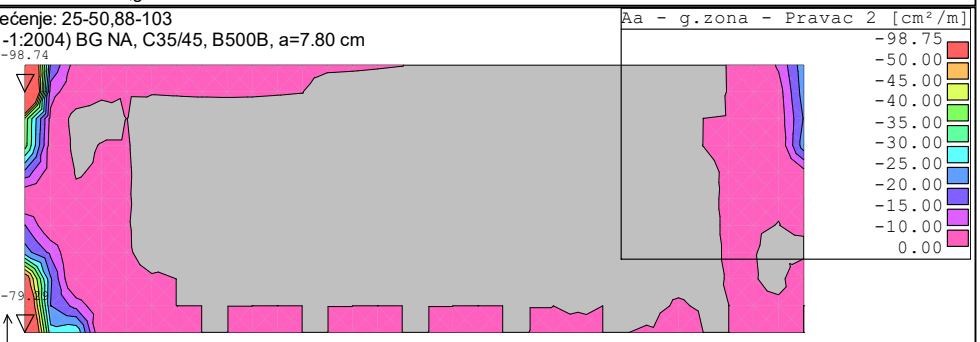
Ram: Ram 4
Aa - d.zona - Pravac 2 - max Aa2,d= 114.02 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



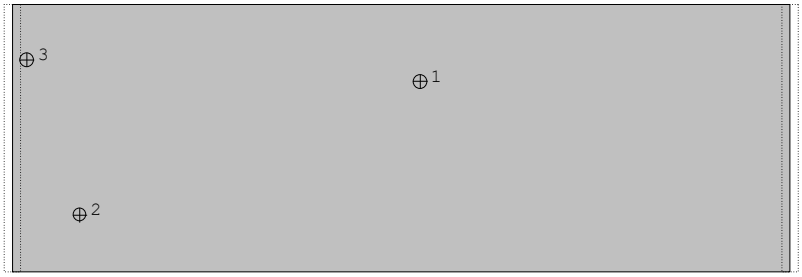
Ram: Ram 4
Aa - g.zona - Pravac 1 - max Aa1,g= -49.71 cm²/m

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: Ram 4
Aa - g.zona - Pravac 2 - max Aa2,g= -98.74 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: Ram 4
Aa - g.zona

Ram: Ram 4
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
d,pl=100.0 cm
C35/45 (γC = 1.50, γS = 1.15) [SP]
Gornja zona: B500B (a=7.8 cm)
Donja zona: B500B (a=7.8 cm)
Dimenzionisanje grupe slučajeva opterećenja: 24-45 (NOSIVOST)

Tačka 1
X=92.16 m; Y=-8.00 m; Z=6.82 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = 39.79 kNm [Mxy]
Ned = 1538.40 kN
[Mxy] M1=38.29 M2=163.72 Mxy=-1.50 [kNm]

εb/εa = -0.166/25.000 ‰
Ad1 = 18.75 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = 263.76 kNm [Mxy]
Ned = -213.68 kN
[Mxy] M1=38.29 M2=163.72 Mxy=-1.50 [kNm]

εb/εa = -1.298/25.000 ‰
Ad2 = 3.96 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
Med = 38.27 kNm [Mxy]
Ned = 1538.40 kN
[Mxy] M1=38.29 M2=163.72 Mxy=-1.50 [kNm]

εb/εa = -0.159/25.000 ‰
Ag1 = 18.63 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.35xIV
+1.45xV
Med = 0.00 kNm [Mxy]
Ned = -330.87 kN
[Mxy] M1=24.22 M2=106.73 Mxy=-18.37 [kNm]

Ag2 = 0.00 cm²/m

Tačka 2
X=80.30 m; Y=-8.00 m; Z=1.95 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXIII
Med = -22.58 kNm [Mxy]
Ned = 1340.75 kN
[Mxy] M1=-25.78 M2=-54.94 Mxy=-13.26 [kNm]

εb/εa = -0.111/25.000 ‰
Ad1 = 16.10 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = 93.65 kNm [Mxy]
Ned = 130.60 kN
[Mxy] M1=-25.78 M2=-54.94 Mxy=-13.26 [kNm]

εb/εa = -0.680/25.000 ‰
Ad2 = 3.78 cm²/m

Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXIII
Med = -39.04 kNm [Mxy]
Ned = 1340.75 kN
[Mxy] M1=-25.78 M2=-54.94 Mxy=-13.26 [kNm]

εb/εa = -0.199/25.000 ‰
Ag1 = 16.45 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.00xXX+0.30xXXI
Med = -9.47 kNm [Mxy]
Ned = 130.60 kN
[Mxy] M1=-2.44 M2=42.09 Mxy=51.56 [kNm]

εb/εa = -0.188/25.000 ‰
Ag2 = 1.73 cm²/m

Tačka 3
X=78.44 m; Y=-8.00 m; Z=7.80 m
Donja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV
Med = 9.28 kNm [Mxy]
Ned = 697.11 kN
[Mxy] M1=6.75 M2=-285.96 Mxy=26.89 [kNm]

εb/εa = -0.060/25.000 ‰
Ad1 = 8.27 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.50xXVI
+1.00xXX+0.30xXXI
Med = 128.30 kNm [Mxy]
Ned = 377.58 kN
[Mxy] M1=6.75 M2=-285.96 Mxy=26.89 [kNm]

εb/εa = -0.730/25.000 ‰
Ad2 = 7.53 cm²/m

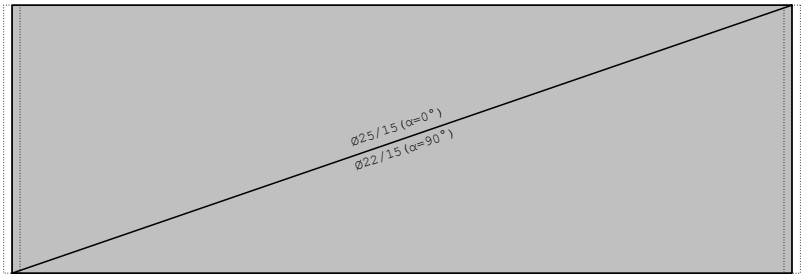
Gornja zona
Pravac 1: (α=0°)
Merodavna kombinacija:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV
Med = -20.13 kNm [Mxy]
Ned = 697.11 kN
[Mxy] M1=6.75 M2=-285.96 Mxy=26.89 [kNm]

εb/εa = -0.172/25.000 ‰
Ag1 = 8.54 cm²/m

Pravac 2: (α=90°)
Merodavna kombinacija:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXIII
Med = -274.21 kNm [Mxy]
Ned = 113.24 kN
[Mxy] M1=18.02 M2=-249.48 Mxy=24.73 [kNm]

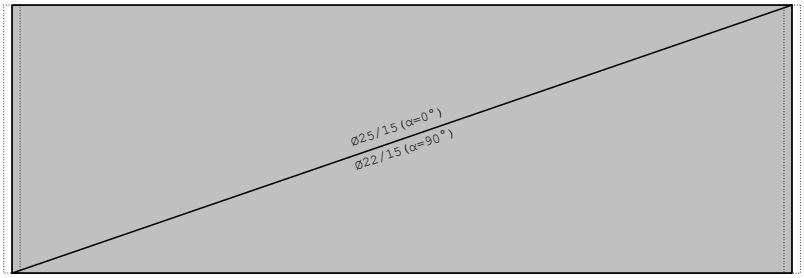
εb/εa = -1.202/25.000 ‰
Ag2 = 8.08 cm²/m

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



Ram: Ram 4
Aa - d.zona

Usvojena armatura
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B, a=7.80 cm



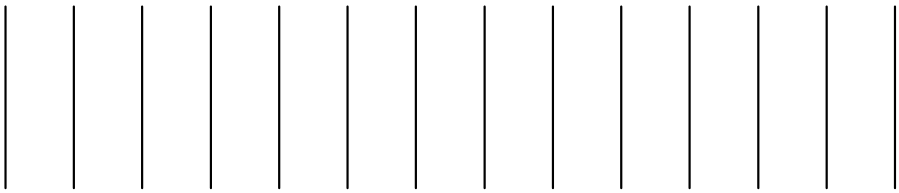
Ram: Ram 4
Aa - g.zona

5.6.4 Стубови

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B

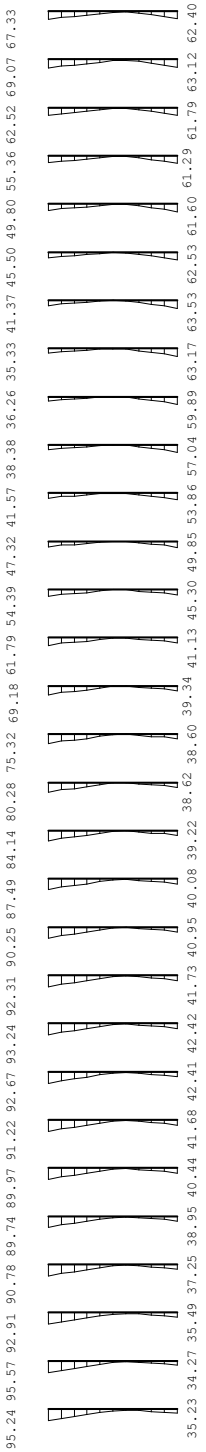
Ram: Ram 2
Armatura u gredama: max Aa2/Aa1= 146.98 / 228.01 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



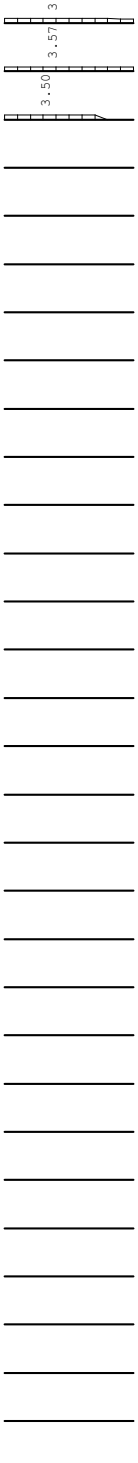
Ram: Ram 2
Armatura u gredama: max Aa,uz= 27.89 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



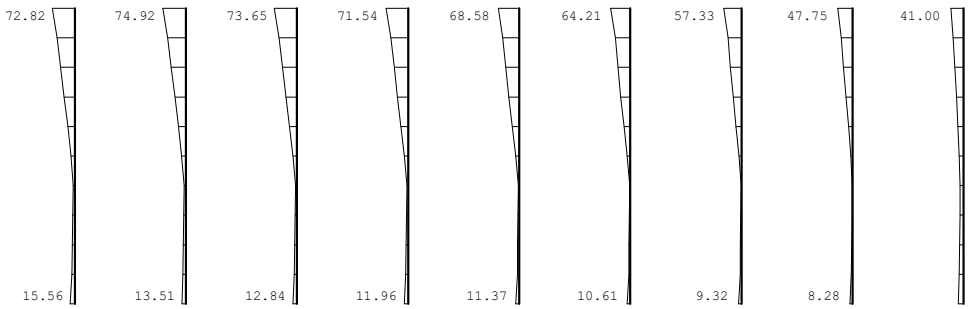
Ram: Ram 3
Armatura u gredama: max Aa1= 210.14 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



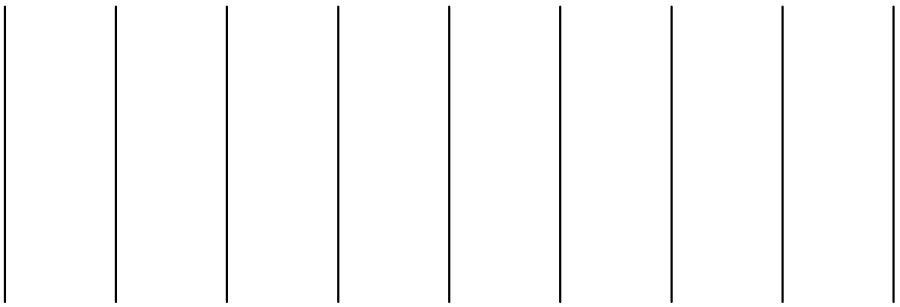
Ram: Ram 3
Armatura u gredama: max Aa,uz= 21.00 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



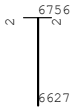
Ram: Ram 4
Armatura u gredama: max Aa1= 198.08 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



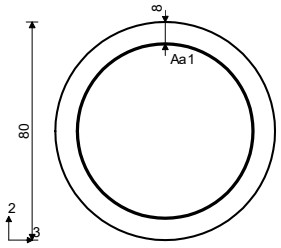
Ram: Ram 4
Armatura u gredama: max Aa,uz= 32.22 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C35/45, B500B



Ram: Ram 3
Dispozicija greda

Greda 524-239
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C35/45 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



[cm]

li,2 = 9.75 m (λ2 = 48.75)
li,3 = 9.75 m (λ3 = 48.75)
Nepomerljiva konstrukcija

Presek 1-1 x = 0.00m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = -496.29 kN
M2ed = 1018.03 kNm
M3ed = 483.64 kNm
Uvećanje momenta savijanja usled izvijanja
Δe2 = 2.4<e0> + 5.6<eII> = 8.0 cm
|ΔM2| = 39.78 kNm
Δe3 = 2.4<e0> + 5.6<eII> = 8.0 cm
|ΔM3| = 39.78 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
M1ed = 13.03 kNm

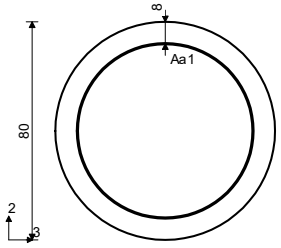
Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.30xX
+0.50xXIV+1.33xXX+1.00xXXI+0.30xXXII
V2ed = 139.49 kN
V3ed = 25.16 kN
M1ed = 7.40 kNm

Vrd,max,2 = 1682.26 kN
Vrd,max,3 = 1682.26 kN
εb/εa = -3.500/6.235 ‰

Aa1 =	94.63	+	0.94`	=	95.57	cm²
Aa2 =	0.00	+	0.00`	=	0.00	cm²
Aa3 =	0.00	+	0.00`	=	0.00	cm²
Aa4 =	0.00	+	0.00`	=	0.00	cm²
Aa,uz =		0.00	cm²/m		(m=2)	

*) - dodatna podužna armatura za prijem torzije.

Greda 6756-6627
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C35/45 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



[cm]

li,2 = 9.75 m (λ2 = 48.75)
li,3 = 9.75 m (λ3 = 48.75)
Nepomerljiva konstrukcija

Presek 2-2 x = 0.00m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
N1ed = -865.50 kN
M2ed = -779.31 kNm
M3ed = -446.43 kNm
Uvećanje momenta savijanja usled izvijanja
Δe2 = 2.4<e0> + 5.1<eII> = 7.5 cm
|ΔM2| = 65.09 kNm
Δe3 = 2.4<e0> + 4.8<eII> = 7.2 cm
|ΔM3| = 62.29 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
M1ed = 14.57 kNm

Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
V2ed = 80.48 kN
V3ed = 151.94 kN
M1ed = 14.55 kNm

Vrd,max,2 = 1641.94 kN
Vrd,max,3 = 1641.94 kN
εb/εa = -3.500/6.216 ‰

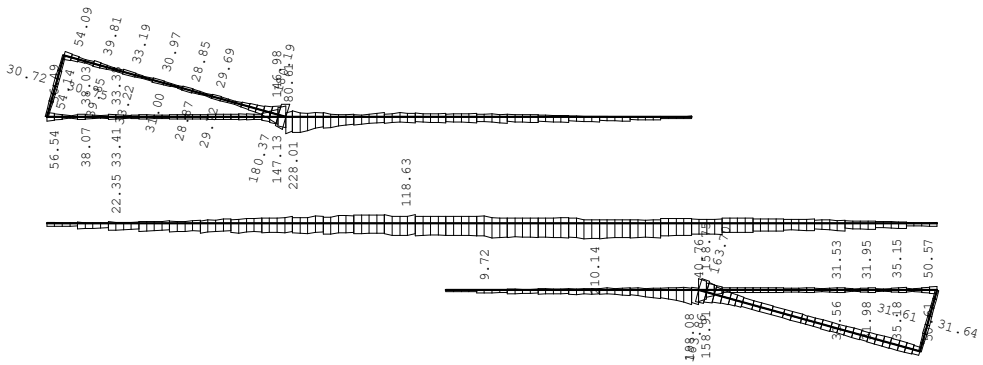
Aa1 =	68.02	+	1.05`	=	69.07	cm²
Aa2 =	0.00	+	0.00`	=	0.00	cm²
Aa3 =	0.00	+	0.00`	=	0.00	cm²
Aa4 =	0.00	+	0.00`	=	0.00	cm²
Aa,uz =		3.57	cm²/m		(m=2)	

*) - dodatna podužna armatura za prijem torzije.

Усвојено: подужна → 18Ø28 (110.88 cm²)
узенгије → UØ14/15 (10.27 cm²/m').

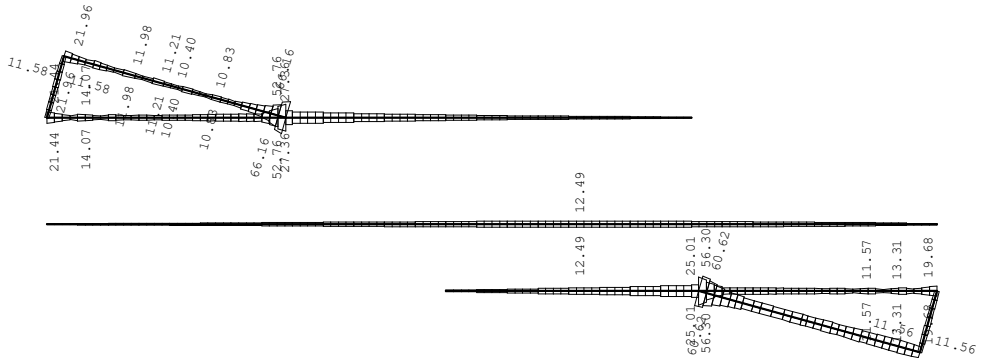
5.6.5 Наглавне греде

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



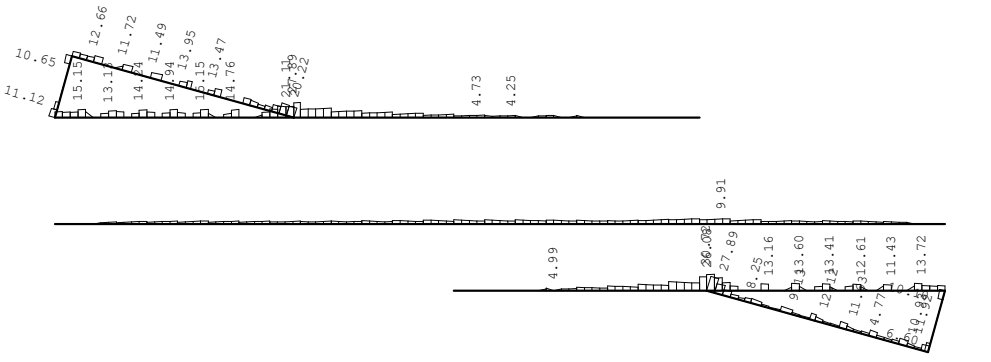
Nivo: Naglavne grede [0.00 m]
Armatura u gredama: max Aa2/Aa1= 180.19 / 228.01 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



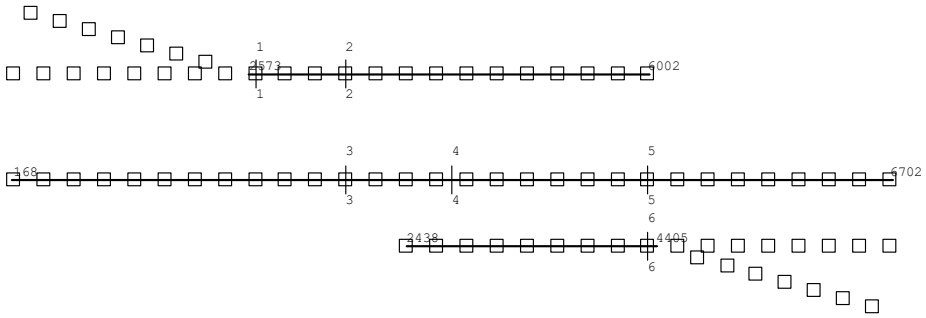
Nivo: Naglavne grede [0.00 m]
Armatura u gredama: max Aa3/Aa4= 66.16 / 66.16 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



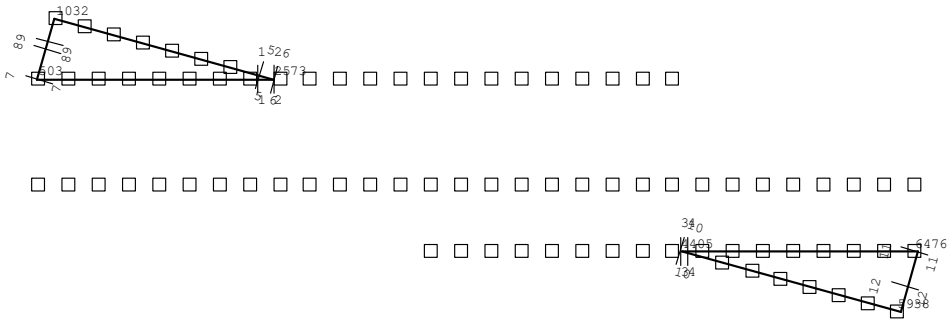
Nivo: Naglavne grede [0.00 m]
Armatura u gredama: max Aa,uz= 30.72 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



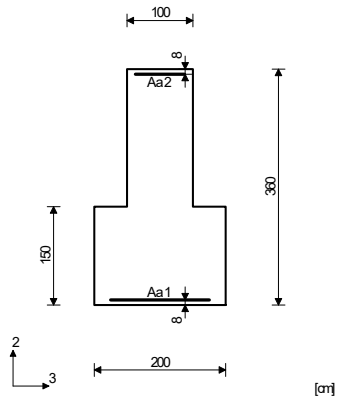
Nivo: Naglavne grede [0.00 m]
Dispozicija greda

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



Nivo: Naglavne grede [0.00 m]
Dispozicija greda

Greda 2573-6002
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 1-1 x = 0.77m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 4889.11 kN
M2ed = 1448.15 kNm
M3ed = 16581.98 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
M1ed = -2648.25 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = 5999.97 kN
V3ed = 54.73 kN
M1ed = -2245.81 kNm

Vrd,max,2 = 14330.46 kN
Vrd,max,3 = 11724.92 kN
εb/εa = -3.500/19.300 ‰

Aa1 =	180.41	+	14.63`	=	195.04	cm²
Aa2 =	68.43	+	6.68`	=	75.11	cm²
Aa3 =	0.00	+	27.36`	=	27.36	cm²
Aa4 =	0.00	+	27.36`	=	27.36	cm²
Aa,uz =	27.89	cm²/m		(m=2)		

`) - dodatna podužna armatura za prijem torzije.

Presek 2-2 x = 11.72m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.50xXVI
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 4507.25 kN
M2ed = 381.15 kNm
M3ed = 706.04 kNm

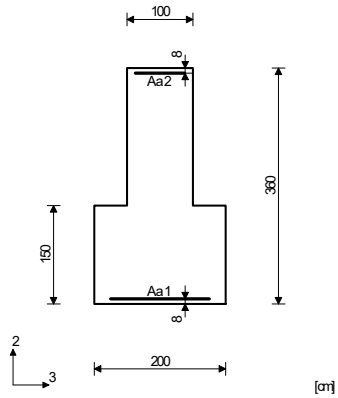
Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
M1ed = -1512.93 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = 1824.80 kN
V3ed = 25.92 kN
M1ed = -1339.44 kNm

Vrd,max,2 = 14217.98 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -1.712/25.000 ‰

Aa1 =	67.18	+	8.36`	=	75.54	cm²
Aa2 =	56.09	+	3.82`	=	59.90	cm²
Aa3 =	0.00	+	15.63`	=	15.63	cm²
Aa4 =	0.00	+	15.63`	=	15.63	cm²
Aa,uz =	10.27	cm²/m		(m=2)		

Greda 168-6702
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 3-3 x = 40.15m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 8888.53 kN
M2ed = 172.21 kNm
M3ed = 2747.10 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -917.26 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXV+1.80xXX
V2ed = -1436.39 kN
V3ed = -3.41 kN
M1ed = -584.54 kNm

Vrd,max,2 = 14217.98 kN
Vrd,max,3 = 11632.90 kN
εb/εa = 0.071/25.000 ‰

Aa1 =	138.91	+	5.07`	=	143.98	cm²
Aa2 =	115.97	+	2.31`	=	118.29	cm²
Aa3 =	0.00	+	9.48`	=	9.48	cm²
Aa4 =	0.00	+	9.48`	=	9.48	cm²
Aa,uz =	6.80	cm²/m		(m=2)		

`) - dodatna podužna armatura za prijem torzije.

Presek 4-4 x = 52.93m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 9090.25 kN
M2ed = 70.30 kNm
M3ed = 1850.15 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
M1ed = -1125.53 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.45xV-1.45xVII+1.50xIX+0.90xXII
+1.80xXX
V2ed = -1017.37 kN
V3ed = -8.42 kN
M1ed = -1027.56 kNm

Vrd,max,2 = 14217.98 kN
Vrd,max,3 = 11632.90 kN
εb/εa = 0.914/25.000 ‰

Aa1 =	193.48	+	6.22`	=	199.70	cm²
Aa2 =	73.39	+	2.84`	=	76.23	cm²
Aa3 =	0.00	+	11.63`	=	11.63	cm²
Aa4 =	0.00	+	11.63`	=	11.63	cm²
Aa,uz =	6.49	cm²/m		(m=2)		

Presek 5-5 x = 76.65m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 7191.53 kN
M2ed = -111.82 kNm
M3ed = 6747.79 kNm

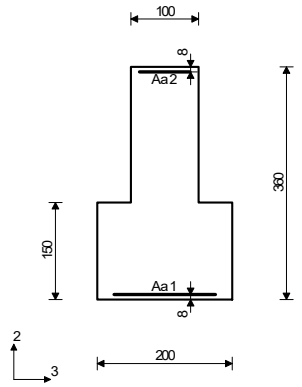
Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -1019.72 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
V2ed = 1473.58 kN
V3ed = -11.04 kN
M1ed = -837.95 kNm

Vrd,max,2 = 14217.98 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -0.380/25.000 ‰

Aa1 =	142.64	+	5.64`	=	148.28	cm²
Aa2 =	54.11	+	2.57`	=	56.68	cm²
Aa3 =	0.00	+	10.54`	=	10.54	cm²
Aa4 =	0.00	+	10.54`	=	10.54	cm²
Aa,uz =	7.63	cm²/m		(m=2)		

Greda 168-6702
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva
opterećenja: 25-50,88-103 (NOSIVOST)



[cm]

Presek 3-3 x = 40.15m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 8888.53 kN
M2ed = 172.21 kNm
M3ed = 2747.10 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -917.26 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.50xIII+1.00xIV
+1.16xV+1.16xVII+1.50xXV+1.80xXX
V2ed = -1436.39 kN
V3ed = -3.41 kN
M1ed = -584.54 kNm

Vrd,max,2 = 14217.98 kN
Vrd,max,3 = 11632.90 kN
εb/εa = 0.071/25.000 ‰
Aa1 = 138.91 + 5.07` = 143.98 cm²
Aa2 = 115.97 + 2.31` = 118.29 cm²
Aa3 = 0.00 + 9.48` = 9.48 cm²
Aa4 = 0.00 + 9.48` = 9.48 cm²
Aa,uz = 6.80 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

Presek 4-4 x = 52.93m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 9090.25 kN
M2ed = 70.30 kNm
M3ed = 1850.15 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
M1ed = -1125.53 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.45xV-1.45xVII+1.50xIX+0.90xXII
+1.80xXX
V2ed = -1017.37 kN
V3ed = -8.42 kN
M1ed = -1027.56 kNm

Vrd,max,2 = 14217.98 kN
Vrd,max,3 = 11632.90 kN
εb/εa = 0.914/25.000 ‰
Aa1 = 193.48 + 6.22` = 199.70 cm²
Aa2 = 73.39 + 2.84` = 76.23 cm²
Aa3 = 0.00 + 11.63` = 11.63 cm²
Aa4 = 0.00 + 11.63` = 11.63 cm²
Aa,uz = 6.49 cm²/m (m=2)

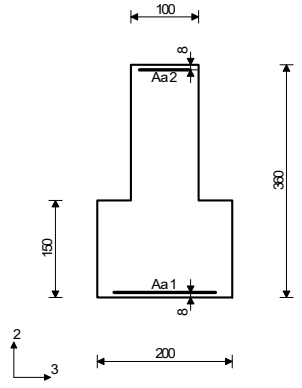
Presek 5-5 x = 76.65m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 7191.53 kN
M2ed = -111.82 kNm
M3ed = 6747.79 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -1019.72 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
V2ed = 1473.58 kN
V3ed = -11.04 kN
M1ed = -837.95 kNm

Vrd,max,2 = 14217.98 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -0.380/25.000 ‰
Aa1 = 142.64 + 5.64` = 148.28 cm²
Aa2 = 54.11 + 2.57` = 56.68 cm²
Aa3 = 0.00 + 10.54` = 10.54 cm²
Aa4 = 0.00 + 10.54` = 10.54 cm²
Aa,uz = 7.63 cm²/m (m=2)

Greda 2438-4405
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva
opterećenja: 25-50,88-103 (NOSIVOST)



[cm]

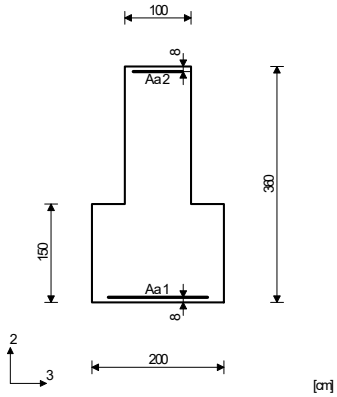
Presek 6-6 x = 29.20m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 3122.90 kN
M2ed = 1537.55 kNm
M3ed = 15531.71 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
M1ed = -2420.66 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -5380.79 kN
V3ed = -32.40 kN
M1ed = -2407.20 kNm

Vrd,max,2 = 14437.40 kN
Vrd,max,3 = 11812.42 kN
εb/εa = -3.500/16.448 ‰
Aa1 = 152.67 + 13.38` = 166.05 cm²
Aa2 = 34.65 + 6.11` = 40.76 cm²
Aa3 = 0.00 + 25.01` = 25.01 cm²
Aa4 = 0.00 + 25.01` = 25.01 cm²
Aa,uz = 26.08 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

Greda 2438-4405
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



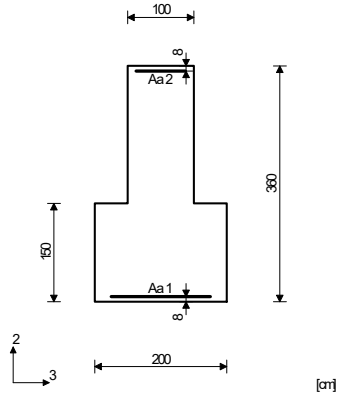
Presek 6-6 x = 29.20m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 3122.90 kN
M2ed = 1537.55 kNm
M3ed = 15531.71 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
M1ed = -2420.66 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -5380.79 kN
V3ed = -32.40 kN
M1ed = -2407.20 kNm

Vrd,max,2 = 14437.40 kN
Vrd,max,3 = 11812.42 kN
εb/εa = -3.500/16.448 ‰
Aa1 = 152.67 + 13.38` = 166.05 cm²
Aa2 = 34.65 + 6.11` = 40.76 cm²
Aa3 = 0.00 + 25.01` = 25.01 cm²
Aa4 = 0.00 + 25.01` = 25.01 cm²
Aa,uz = 26.08 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

Greda 2573-6002
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 1-1 x = 0.77m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 4889.11 kN
M2ed = 1448.15 kNm
M3ed = 16581.98 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.50xXV+1.80xXX
M1ed = -2648.25 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = 5999.97 kN
V3ed = 54.73 kN
M1ed = -2245.81 kNm

Vrd,max,2 = 14330.46 kN
Vrd,max,3 = 11724.92 kN
εb/εa = -3.500/19.300 ‰
Aa1 = 180.41 + 14.63` = 195.04 cm²
Aa2 = 68.43 + 6.68` = 75.11 cm²
Aa3 = 0.00 + 27.36` = 27.36 cm²
Aa4 = 0.00 + 27.36` = 27.36 cm²
Aa,uz = 27.89 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

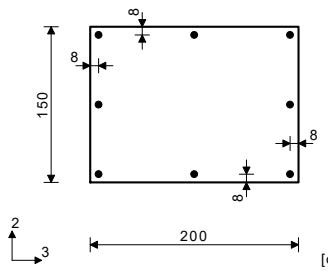
Presek 2-2 x = 11.72m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.50xXVI
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 4507.25 kN
M2ed = 381.15 kNm
M3ed = 706.04 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
M1ed = -1512.93 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = 1824.80 kN
V3ed = 25.92 kN
M1ed = -1339.44 kNm

Vrd,max,2 = 14217.98 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -1.712/25.000 ‰
Aa1 = 67.18 + 8.36` = 75.54 cm²
Aa2 = 56.09 + 3.82` = 59.90 cm²
Aa3 = 0.00 + 15.63` = 15.63 cm²
Aa4 = 0.00 + 15.63` = 15.63 cm²
Aa,uz = 10.27 cm²/m (m=2)

Greda 503-2573
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 1-1 x = 26.51m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 2792.06 kN
M2ed = 333.53 kNm
M3ed = 3746.39 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -456.21 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -2050.73 kN
V3ed = 9.93 kN
M1ed = -388.28 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -2.011/25.000 ‰

Aa1 =	71.18	+	5.73`	=	76.91	cm²
Aa2 =	71.10	+	5.73`	=	76.84	cm²
Aa3 =	23.70	+	4.18`	=	27.88	cm²
Aa4 =	23.70	+	4.18`	=	27.88	cm²
Aa,uz =	21.11	cm²/m		(m=2)		

`) - dodatna podužna armatura za prijem torzije.

Presek 2-2 x = 28.43m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xVIII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 2578.14 kN
M2ed = 1060.60 kNm
M3ed = 9032.16 kNm

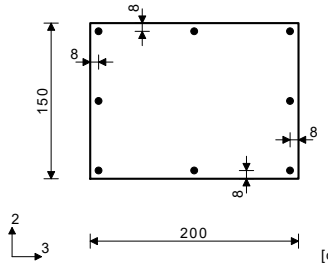
Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -758.90 kNm

Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.30xX
+0.50xXIV+1.33xXX+1.00xXXI+0.30xXXII
V2ed = 2161.55 kN
V3ed = 164.80 kN
M1ed = -125.15 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -3.352/25.000 ‰

Aa1 =	137.59	+	9.54`	=	147.13	cm²
Aa2 =	137.44	+	9.54`	=	146.98	cm²
Aa3 =	45.81	+	6.95`	=	52.76	cm²
Aa4 =	45.81	+	6.95`	=	52.76	cm²
Aa,uz =	20.31	cm²/m		(m=2)		

Greda 4405-6476
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 3-3 x = 0.00m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 2143.25 kN
M2ed = 533.73 kNm
M3ed = 10299.92 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -681.31 kNm

Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
V2ed = 3120.58 kN
V3ed = 182.16 kN
M1ed = -294.41 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -3.334/25.000 ‰

Aa1 =	150.35	+	8.56`	=	158.91	cm²
Aa2 =	150.19	+	8.56`	=	158.75	cm²
Aa3 =	50.06	+	6.24`	=	56.30	cm²
Aa4 =	50.06	+	6.24`	=	56.30	cm²
Aa,uz =	30.09	cm²/m		(m=2)		

`) - dodatna podužna armatura za prijem torzije.

Presek 4-4 x = 0.93m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 2143.67 kN
M2ed = 396.29 kNm
M3ed = 7372.87 kNm

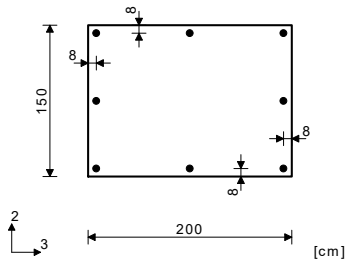
Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -681.31 kNm

Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
V2ed = 3190.43 kN
V3ed = 182.16 kN
M1ed = -294.41 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -2.895/25.000 ‰

Aa1 =	112.31	+	8.56`	=	120.87	cm²
Aa2 =	112.19	+	8.56`	=	120.75	cm²
Aa3 =	37.40	+	6.24`	=	43.63	cm²
Aa4 =	37.40	+	6.24`	=	43.63	cm²
Aa,uz =	30.72	cm²/m		(m=2)		

Greda 1032-2573
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 5-5 x = 25.54m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = 3954.52 kN
M2ed = -328.96 kNm
M3ed = 3840.29 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+0.75xXX+1.00xXXI+0.30xXXII
M1ed = 717.83 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -2100.90 kN
V3ed = -116.20 kN
M1ed = 192.36 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -1.840/25.000 ‰
Aa1 = 82.44 + 9.02` = 91.46 cm²
Aa2 = 82.35 + 9.02` = 91.37 cm²
Aa3 = 27.45 + 6.57` = 34.02 cm²
Aa4 = 27.45 + 6.57` = 34.02 cm²
Aa,uz = 20.22 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

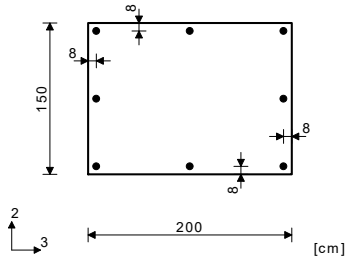
Presek 6-6 x = 27.39m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 4355.30 kN
M2ed = 709.92 kNm
M3ed = 9972.95 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+0.75xXX+1.00xXXI+0.30xXXII
M1ed = 1228.69 kNm

Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+0.75xXX+1.00xXXI+0.30xXXII
V2ed = 1142.12 kN
V3ed = 147.37 kN
M1ed = 1210.64 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -3.049/25.000 ‰
Aa1 = 164.93 + 15.44` = 180.37 cm²
Aa2 = 164.75 + 15.44` = 180.19 cm²
Aa3 = 54.92 + 11.25` = 66.16 cm²
Aa4 = 54.92 + 11.25` = 66.16 cm²
Aa,uz = 18.55 cm²/m (m=2)

Greda 503-1032
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 7-7 x = 0.00m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV+0.30xVII+0.30xVIII+0.50xXVI
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 1234.56 kN
M2ed = 671.84 kNm
M3ed = 499.44 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
M1ed = -288.91 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -1016.80 kN
V3ed = 380.96 kN
M1ed = -288.08 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -2.345/25.000 ‰
Aa1 = 17.03 + 3.63` = 20.66 cm²
Aa2 = 17.01 + 3.63` = 20.64 cm²
Aa3 = 5.67 + 2.64` = 8.31 cm²
Aa4 = 5.67 + 2.64` = 8.31 cm²
Aa,uz = 11.12 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

Presek 8-8 x = 3.80m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
N1ed = 1388.92 kN
M2ed = 1842.25 kNm
M3ed = 616.98 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -137.07 kNm

Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.45xV-1.45xVII+1.50xIX+0.90xXI
+0.75xXX
V2ed = -27.07 kN
V3ed = -72.74 kN
M1ed = -136.71 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -2.001/25.000 ‰
Aa1 = 29.03 + 1.72` = 30.75 cm²
Aa2 = 29.00 + 1.72` = 30.72 cm²
Aa3 = 9.67 + 1.25` = 10.92 cm²
Aa4 = 9.67 + 1.25` = 10.92 cm²
Aa,uz = 0.00 cm²/m (m=2)

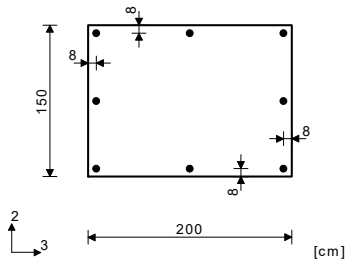
Presek 9-9 x = 4.76m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
N1ed = 1304.31 kN
M2ed = 1691.60 kNm
M3ed = 615.31 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.45xV-1.45xVII+1.50xIX+0.90xXI
+0.75xXX
M1ed = -285.68 kNm

Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.45xV-1.45xVII+1.50xIX+0.90xXI
+0.75xXX
V2ed = 41.61 kN
V3ed = -328.96 kN
M1ed = -285.68 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -2.009/25.000 ‰
Aa1 = 26.91 + 3.59` = 30.51 cm²
Aa2 = 26.89 + 3.59` = 30.48 cm²
Aa3 = 8.96 + 2.61` = 11.58 cm²
Aa4 = 8.96 + 2.61` = 11.58 cm²
Aa,uz = 0.00 cm²/m (m=2)

Greda 5938-4405
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 10-10 x = 27.30m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 6442.19 kN
M2ed = 1659.77 kNm
M3ed = 7304.72 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xIX+0.50xXVIII
+0.75xXX+1.00xXXI+0.30xXXII
M1ed = 1219.49 kNm

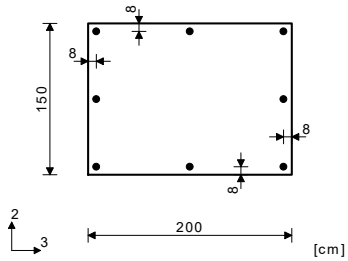
Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+0.75xXX+1.00xXXI+0.30xXXII
V2ed = 2214.34 kN
V3ed = 237.14 kN
M1ed = 1166.00 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -2.812/25.000 ‰

Aa1 =	148.54	+	15.33`	=	163.86 cm²
Aa2 =	148.38	+	15.33`	=	163.70 cm²
Aa3 =	49.46	+	11.16`	=	60.62 cm²
Aa4 =	49.46	+	11.16`	=	60.62 cm²

Aa,uz = 27.89 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

Greda 6476-5938
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva opterećenja: 25-50,88-103 (NOSIVOST)



Presek 11-11 x = 0.00m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.00xIII+1.00xIV
+0.30xV-0.30xVII+0.30xVIII+0.50xXVII
+1.33xXX+1.00xXXI+0.30xXXII
N1ed = 924.42 kN
M2ed = 1387.10 kNm
M3ed = 281.57 kNm

Merodavna kombinacija za torziju:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
M1ed = -225.93 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -951.55 kN
V3ed = 385.32 kN
M1ed = -225.12 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -1.436/25.000 ‰

Aa1 =	20.72	+	2.84`	=	23.56 cm²
Aa2 =	20.70	+	2.84`	=	23.54 cm²
Aa3 =	6.90	+	2.07`	=	8.97 cm²
Aa4 =	6.90	+	2.07`	=	8.97 cm²

Aa,uz = 10.10 cm²/m (m=2)
`) - dodatna podužna armatura za prijem torzije.

Presek 12-12 x = 4.35m
Merodavna kombinacija za savijanje:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
N1ed = 1398.61 kN
M2ed = 1836.66 kNm
M3ed = 608.75 kNm

Merodavna kombinacija za torziju:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXI
+0.75xXX
M1ed = -205.90 kNm

Merodavna kombinacija za smicanje:
1.00xI+1.00xII+1.50xIII+1.00xIV
+1.45xV-1.45xVII+1.50xIX+0.90xXI
+0.75xXX
V2ed = -24.19 kN
V3ed = -227.27 kN
M1ed = -205.05 kNm

Vrd,max,2 = 11471.33 kN
Vrd,max,3 = 11632.90 kN
εb/εa = -1.981/25.000 ‰

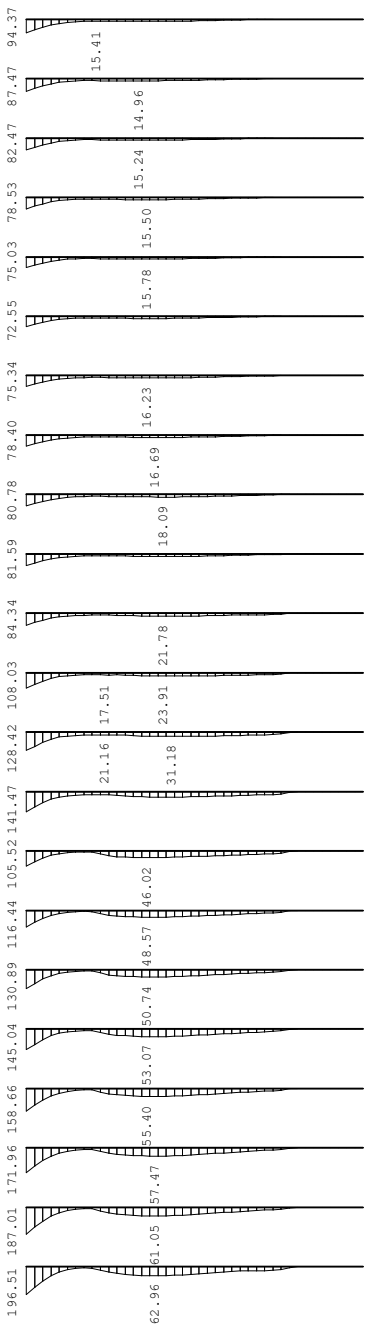
Aa1 =	29.05	+	2.59`	=	31.64 cm²
Aa2 =	29.02	+	2.59`	=	31.61 cm²
Aa3 =	9.67	+	1.88`	=	11.56 cm²
Aa4 =	9.67	+	1.88`	=	11.56 cm²

Aa,uz = 0.00 cm²/m (m=2)

Усвојено: ***доња зона*** → ***у два реда по 19Ø28 (234.08 cm²)***
горња зона → ***у два реда (19+12)Ø28 (190.96 cm²)***
са стране → ***11Ø28 (67.76 cm²)***
парапет → ***Ø28/10 по обиму***
узенгије → ***3UØ14/15 (30.80 cm²/m').***

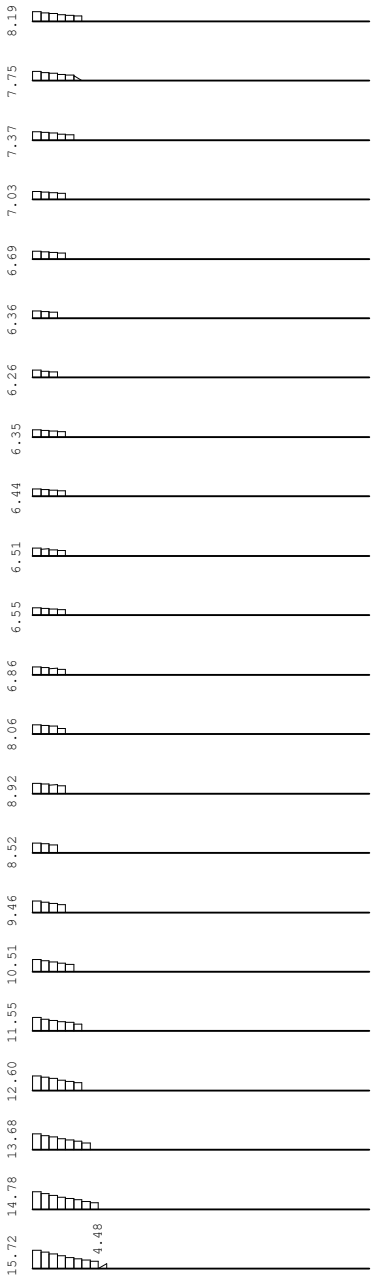
5.6.6 Шипови

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



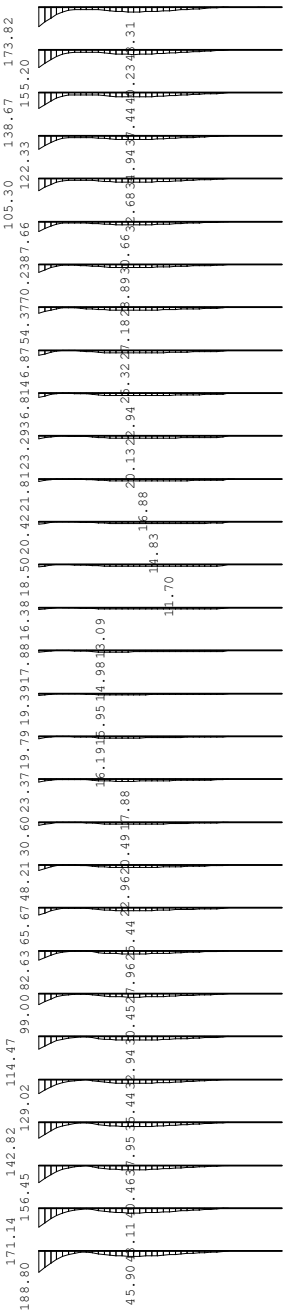
Ram: Ram 2
Armatura u gredama: max Aa2/Aa1= 146.98 / 228.01 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



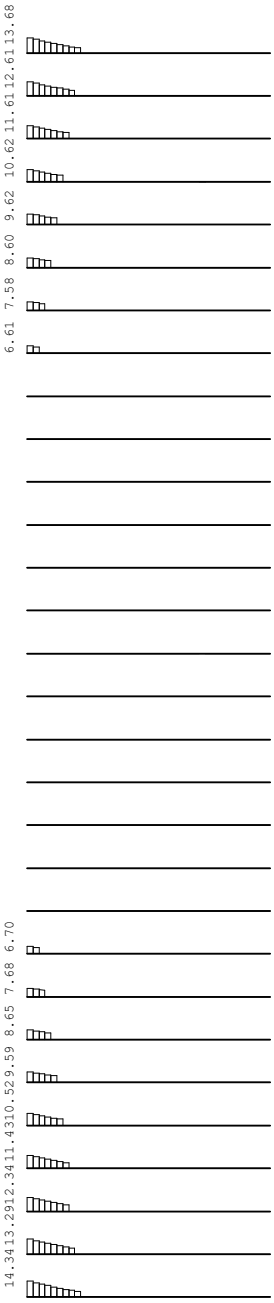
Ram: Ram 2
Armatura u gredama: max Aa,uz= 27.89 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



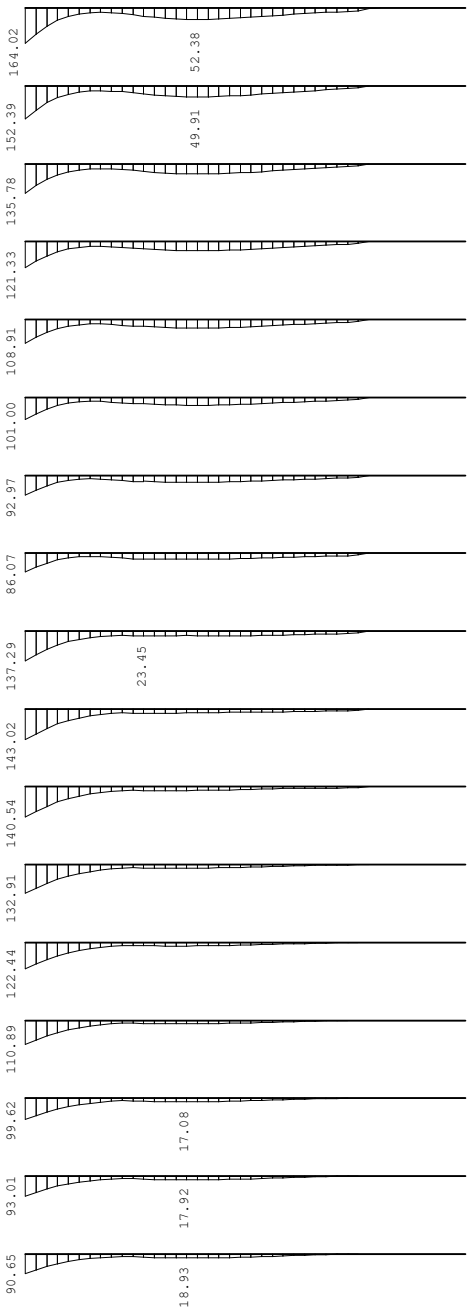
Ram: Ram 3
Armatura u gredama: max Aa1= 210.14 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



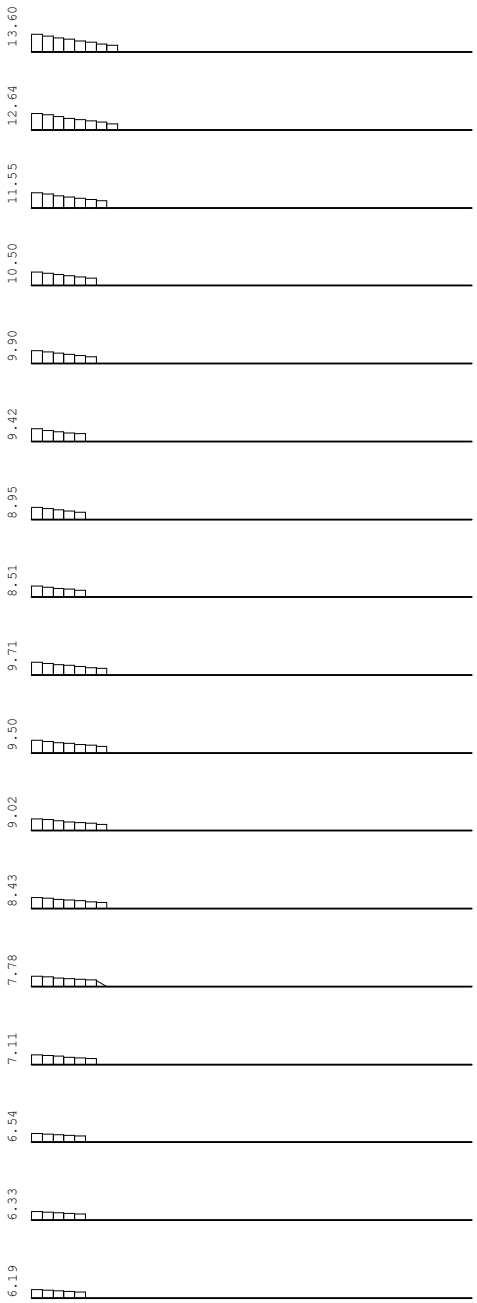
Ram: Ram 3
Armatura u gredama: max Aa,uz= 21.00 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



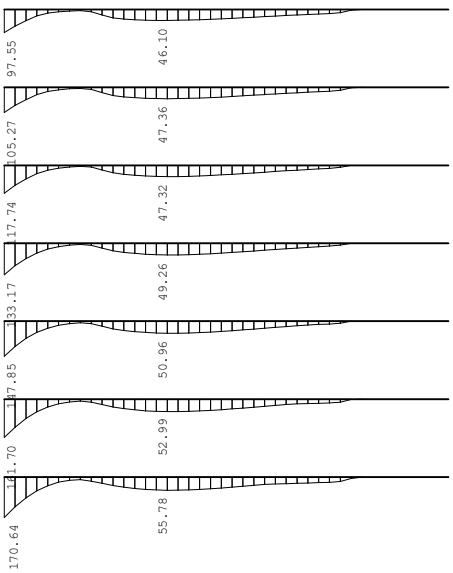
Ram: Ram 4
Armatura u gredama: max Aa1= 198.08 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



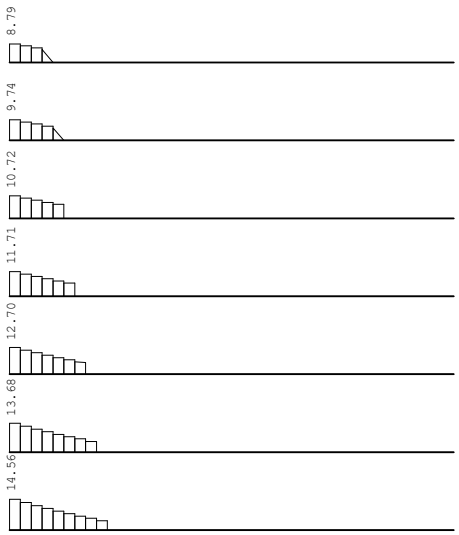
Ram: Ram 4
Armatura u gredama: max Aa,uz= 32.22 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



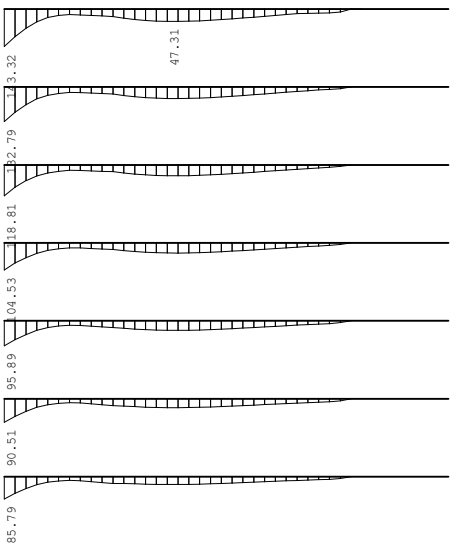
Ram: Ram 1
Armatura u gredama: max Aa1= 180.37 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



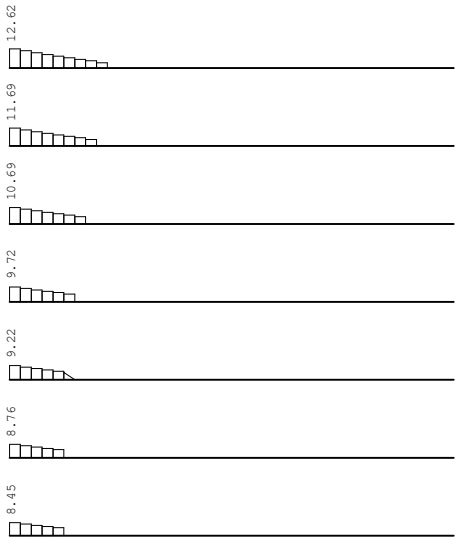
Ram: Ram 1
Armatura u gredama: max Aa,uz= 20.22 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B



Ram: Ram 5
Armatura u gredama: max Aa1= 163.86 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B

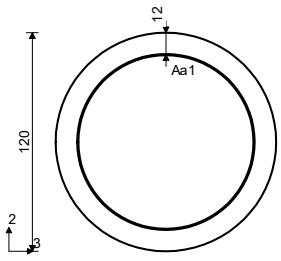


Ram: Ram 5
Armatura u gredama: max Aa,uz= 27.89 cm²

Merodavno opterećenje: 25-50,88-103
EC 2 (EN 1992-1-1:2004) BG NA, C30/37, B500B

Ram: Ram 2
Dispozicija greda

Greda 503-61
EC 2 (EN 1992-1-1:2004) BG NA
α,cc = 0.85
C30/37 (γC = 1.50, γS = 1.15) [SP]
B500B
Dimenzionisanje grupe slučajeva
opterećenja: 25-50,88-103 (NOSIVOST)



[cm]

li,2 = 20.75 m (λ2 = 69.17)
li,3 = 20.75 m (λ3 = 69.17)
Nepomerljiva konstrukcija

Presek 1-1 x = 0.00m
Merodavna kombinacija za savijanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
N1ed = -2174.49 kN
M2ed = 310.79 kNm
M3ed = -3422.55 kNm
Uvećanje momenta savijanja usled izvijanja
Δe2 = 5.2<e0> + 11.9<eII> = 17.0 cm
|ΔM2| = 370.71 kNm
Δe3 = 5.2<e0> + 11.9<eII> = 17.0 cm
|ΔM3| = 370.52 kNm

Merodavna kombinacija za smicanje:
1.35xI+1.35xII+1.00xIII+1.35xIV
+1.16xV-1.16xVII+1.20xIX+1.50xXII
+1.80xXX
V2ed = -1279.39 kN
V3ed = -357.22 kN
M1ed = 0.00 kNm

Vrd,max,2 = 3386.82 kN
Vrd,max,3 = 3386.82 kN
εb/εa = -3.500/5.024 ‰

Aa1 =	196.51	cm²	
Aa2 =	0.00	cm²	
Aa3 =	0.00	cm²	
Aa4 =	0.00	cm²	
Aa,uz =	15.72	cm²/m	(m=2)

Усвојено: подужна → 34Ø28 (209.44 cm²)
узенгије → UØ12/15 (7.53 cm²/m').

6. ГРАНИЧНА СТАЊА УПОТРЕБЉИВОСТИ / SERVICEABILITY LIMIT STATES

6.1 КОМБИНАЦИЈЕ ОПТЕРЕЋЕЊА

Квази-стална 'quasi-permanent' комбинација
$\Sigma G_{k,j}+P_m+\Sigma\ \psi_{2,i}Q_{k,i}$
KOMB 1U: $G_g+G_{dg}+ 1{,}33G_{Tc}+G_{sk}+Z$
KOMB 2U: $G_g+G_{dg}+ 1{,}33G_{Tc}+G_{sk}+Z+0{,}5T_1$
KOMB 3U: $G_g+G_{dg}+ 1{,}33G_{Tc}+G_{sk}+Z+0{,}5T_2$
KOMB 4U: $G_g+G_{dg}+ 1{,}33G_{Tc}\ G_{sk}+Z+0{,}5T_3$
KOMB 5U: $G_g+G_{dg}+1{,}33G_{Tc}\ G_{sk}+Z+0{,}5T_4$
KOMB 6U: $G_g+G_{dg}+1{,}33G_{Tc}\ G_{sk}+Z+0{,}5T_5$
KOMB 7U: $G_g+G_{dg}+1{,}33G_{Tc}\ G_{sk}+Z+0{,}5T_6$
KOMB 8U: $G_g+G_{dg}+ 1{,}33G_{Tc}\ G_{sk}+Z+0{,}5T_7$
KOMB 9U: $G_g+G_{dg}+ 1{,}33G_{Tc}\ G_{sk}+Z+0{,}5T_8$
KOMB 1U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}+G_{sk}+Z$
KOMB 2U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}+G_{sk}+Z+0{,}5T_1$
KOMB 3U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}+G_{sk}+Z+0{,}5T_2$
KOMB 4U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}\ G_{sk}+Z+0{,}5T_3$
KOMB 5U-1: $G_g+G_{dg}+0{,}75G_{Tc}\ G_{sk}+Z+0{,}5T_4$
KOMB 6U-1: $G_g+G_{dg}+0{,}75G_{Tc}\ G_{sk}+Z+0{,}5T_5$
KOMB 7U-1: $G_g+G_{dg}+0{,}75G_{Tc}\ G_{sk}+Z+0{,}5T_6$
KOMB 8U-1: $G_g+G_{dg}+0{,}75G_{Tc}\ G_{sk}+Z+0{,}5T_7$
KOMB 9U-1: $G_g+G_{dg}+0{,}75G_{Tc}\ G_{sk}+Z+0{,}5T_8$

Честа (frequent) комбинација
$\Sigma G_{k,j}+P_m+\ \psi_{1,1}Q_{k,1}\ +\Sigma\ \psi_{2,i}Q_{k,i}$
KOMB 10U: $G_g+G_{dg}+1{,}33G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}$
KOMB 11U: $G_g+G_{dg}+ 1{,}33G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_1$
KOMB 12U: $G_g+G_{dg}+1{,}33G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_2$
KOMB 13U: $G_g+G_{dg}+ 1{,}33G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_3$
KOMB 14U: $G_g+G_{dg}+1{,}33G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_4$
KOMB 15U: $G_g+G_{dg}+ 1{,}33G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_5$
KOMB 16U: $G_g+G_{dg}+1{,}33G_{Tc}\ +\ G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_6$
KOMB 17U: $G_g+G_{dg}+ 1{,}33G_{Tc}\ +\ G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_7$
KOMB 18U: $G_g+G_{dg}+ 1{,}33G_{Tc}\ +\ G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_8$
KOMB 10U-1: $G_g+G_{dg}+0{,}75G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}$
KOMB 11U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_1$
KOMB 12U-1: $G_g+G_{dg}+0{,}75G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_2$
KOMB 13U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_3$
KOMB 14U-1: $G_g+G_{dg}+0{,}75G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_4$
KOMB 15U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}+G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_5$
KOMB 16U-1: $G_g+G_{dg}+0{,}75G_{Tc}\ +\ G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_6$
KOMB 17U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}\ +\ G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_7$
KOMB 18U-1: $G_g+G_{dg}+ 0{,}75G_{Tc}\ +\ G_{sk}+Z+\ Q_{sw/2.II}\ +0{,}5T_8$

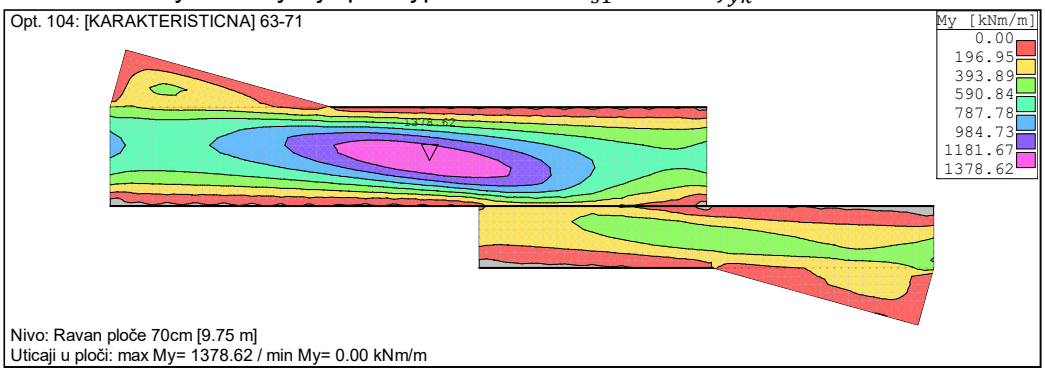
Карактеристична (rare) комбинација
$\Sigma G_{k,j}+P_m+Q_{k,1}+\ \Sigma\ \psi_{0,i}Q_{k,i}$

KOMB 19U: $G_g+G_{dg}+ 1,33G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_1$
KOMB 20U: $G_g+G_{dg}+ 1,33G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_2$
KOMB 21U: $G_g+G_{dg}+ 1,33G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_3$
KOMB 22U: $G_g+G_{dg}+ 1,33G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_4$
KOMB 23U: $G_g+G_{dg}+ 1,33G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_5$
KOMB 24U: $G_g+G_{dg}+ 1,33G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_6$
KOMB 25U: $G_g+G_{dg}+ 1,33G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_7$
KOMB 26U: $G_g+G_{dg}+ 1,33G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_8$
KOMB 19U-1: $G_g+G_{dg}+ 0,75G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_1$
KOMB 20U-1: $G_g+G_{dg}+ 0,75G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_2$
KOMB 21U-1: $G_g+G_{dg}+ 0,75G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_3$
KOMB 22U-1$G_g+G_{dg}+ 0,75G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_4$
KOMB 23U-1: $G_g+G_{dg}+ 0,75G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_5$
KOMB 24U-1: $G_g+G_{dg}+ 0,75G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_6$
KOMB 25U-1: $G_g+G_{dg}+ 0,75G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_7$
KOMB 26U-1: $G_g+G_{dg}+ 0,75G_{Tc} +G_{sk}+Z+ Q_{sw/2.II} +0,6T_8$

6.2 КОНТРОЛА НАПОНА У ПЛОЧИ

Контрола напона се врши за карактеристичну кобинацију оптерећења и потребно је да буду задовољена следећа два услова:

- напон у бетону $\rightarrow \sigma_{c2} < 0.6 \times f_{ck} = 0.6 \times 35\ MPa = 21\ MPa$
- напон у затегнутој арматури $\rightarrow \sigma_{s1} < 0.8 \times f_{yk} = 0.8 \times\ 500\ MPa = 400\ MPa.$

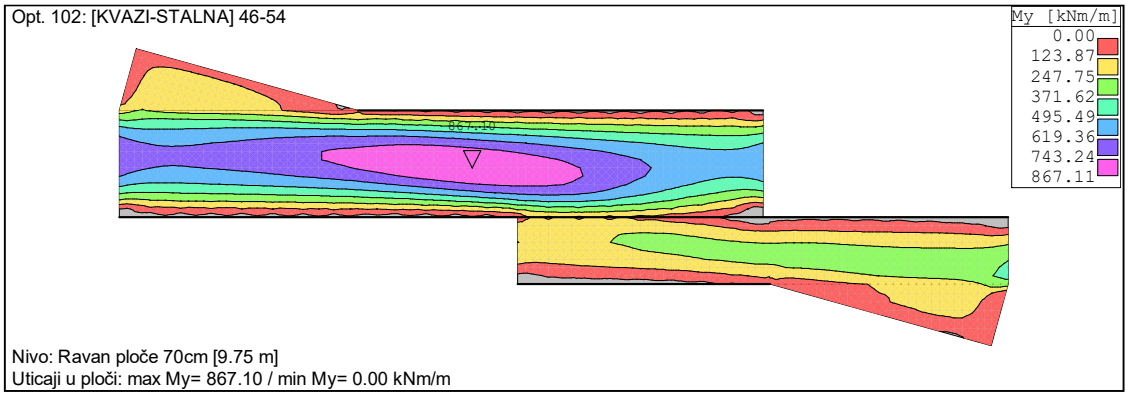


Granično stanje upotrebljivosti - SLS - KONTROLA NAPONA - OPŠTI POSTUPAK					
Visina pritisnute zone (položaj neutralne linije):			x_{II}=	21.4452	cm
BETON:	→	C40/50 (MB45)	→ E_c=	34.0000	GPa
ARMATURA:	→	B500B	→ E_s=	200.0000	GPa
			α=	**5.8824**	
Površina pritisnutog dela betonskog preseka:			A_{cx}=	2144.5200	cm²
Površina armature uz zategnutu ivicu preseka (ivica 1):			A_{s1}=	65.4700	cm²
Površina armature uz pritisnutu ivicu preseka (ivica 2):			A_{s2}=	32.7300	cm²
Površina transformisanog preseka sa prslinom (svedenog na beton):			**A_{II}=**	**2722.1671**	**cm²**
Odstojanje težišta površine pritisnutog dela (T_{cx}) od ivice 2:			z_{cx}=	10.7226	cm
Odstojanje težišta zategnute armature od zategnute ivice preseka (ivica 1):			d_1=	6.2500	cm
Odstojanje težišta pritisnute armature od pritisnute ivice preseka (ivica 2):			d_2=	6.2500	cm
Visina preseka:			h=	95.0000	cm
Položaj težišta transformisanog preseka sa prslinom:			**$z_{II,1}$=**	**73.5548**	**cm**
Sopstveni moment inercije površine pritisnute zone (oko njenog težišta T_{cx}):			I_{cx}=	82188.1219	cm⁴
Moment inercije transformisanog preseka sa prslinom:			**I_{II}=**	**2117764.7269**	**cm⁴**
Uticaji svedeni na težište bruto betonskog preseka:			N=	0.0000	kN
			M=	1378.6200	kNm
Odstojanje težišta bruto preseka T_c od donje ivice preseka (ivica 1):			$z_{c,1}$=	47.5000	cm
Moment u težištu transformisanog preseka:			**M_x=**	**1378.6200**	**kNm**
Napon na mestu neutralne linije:			**σ_{cx}=**	**0.0000**	**MPa**
Napon u beton uz ivicu 2:			**$\sigma_{c,2}$=**	**13.9604**	**MPa**
Napon u armaturi uz ivicu 1:			**$\sigma_{s,1}$=**	**-257.7295**	**MPa**
Napon u armaturi uz ivicu 2:			**$\sigma_{s,2}$=**	**58.1867**	**MPa**

Оба услова су задовољена.

6.3 КОНТРОЛА ПРСЛИНА У ПЛОЧИ

Контрола прслина врши за квази – сталну комбинацију оптерећења.



KONTROLA ŠIRINE PRSLINA

Ulazni podaci

Klasa izloženosti:	XD3 →	w_{max}=	0.30	mm
Beton:	C35/45 →	E_{cm}=	34.00	GPa
		$f_{ct,eff}=f_{ctm}$=	3.20	MPa
Armatura:	B500B →	E_s=	200.00	GPa
Širina preseka:		b=	100.00	cm
Visina preseka:		h=	95.00	cm
Statička visina preseka:		d=	88.75	cm
Površina zategnute armature:		A_{s1}=	65.47	cm^2
Prečnik armature:		Ø=	2.50	cm
Veličina zaštitnog sloja betona do podužne armature:		c=	5.00	cm
Razmak između šipki:		eØ=	7.50	cm
Visina pritisnute zone:		x_{II}=	21.45	cm
Napon u zategnutoj armaturi:		σ_s=	162.1	MPa
Koeficijent koji zavisi od trajanja opterećenja:		k_t=	0.40	
Koeficijent koji obuhvata uticaj prianjanja armature:		k_1=	0.80	
Koeficijent kojim se uzima u obzir oblik dijagrama dilatacija:		k_2=	0.50	
Koeficijenti definisani u nacionalnom aneksu:		k_3=	3.40	
		k_4=	0.425	

Proračun

Odnos modula elastičnosti:

$$\alpha = E_s / E_{cm}$$ α= 5.88 MPa

Visina efektivne površine zategnutog

$$h_{c,eff} = \min \begin{cases} 2.5 \times (h - d) \\ (h - x)/3 \\ h/2 \end{cases}$$ $h_{c,ef}$= 15.63 cm

Efektivna površina zategnutog betona

$$A_{c,eff} = b \times h_{c,eff}$$ $A_{c,eff}$= 1563 cm^2

Koeficijent armiranja:

$$\rho_{\rho,eff} = A_s / A_{c,eff}$$ $\rho_{\rho,eff}$= 0.0419

Razlika srednjih vrednosti dilatacije armature i betona:

$$\varepsilon_{sm} - \varepsilon_{cm} = \frac{\sigma_s - k_t \times \frac{f_{ct,eff}}{\rho_{\rho,eff}} \times (1 + \alpha \times \rho_{\rho,eff})}{E_s} \geq 0.6 \times \frac{\sigma_s}{E_s}$$

$\varepsilon_{sm}-\varepsilon_{cm}$= 6.20E-04

Maksimalni razmak prslina:

$$s_{r,max} = \begin{cases} k_3 \times c + k_1 \times k_2 \times k_4 \times \emptyset / \rho_{\rho,eff}, & e_\emptyset < 5 \times (c + \emptyset/2) \\ 1.3 \times (h - x), & e_\emptyset \geq 5 \times (c + \emptyset/2) \end{cases}$$

$s_{r,max}$= 27.14 cm

Karakteristična širina prslina:

$$w_k = s_{r,max} \times (\varepsilon_{sm} - \varepsilon_{cm})$$ w_k= 0.17 mm < w_{max}= 0.30 mm

Uslov je ispunjen.

7. КОНТРОЛА ДЕФОРМАЦИЈА И ВИБРАЦИЈА / VERIFICATIONS REGARDING DEFORMATIONS AND VIBRATIONS FOR RAILWAY BRIDGES

7.1. КРИТЕРИЈУМ БЕЗБЕДНОСТИ У САОБРАЋАЈУ / CRITERIA FOR TRAFFIC SAFETY

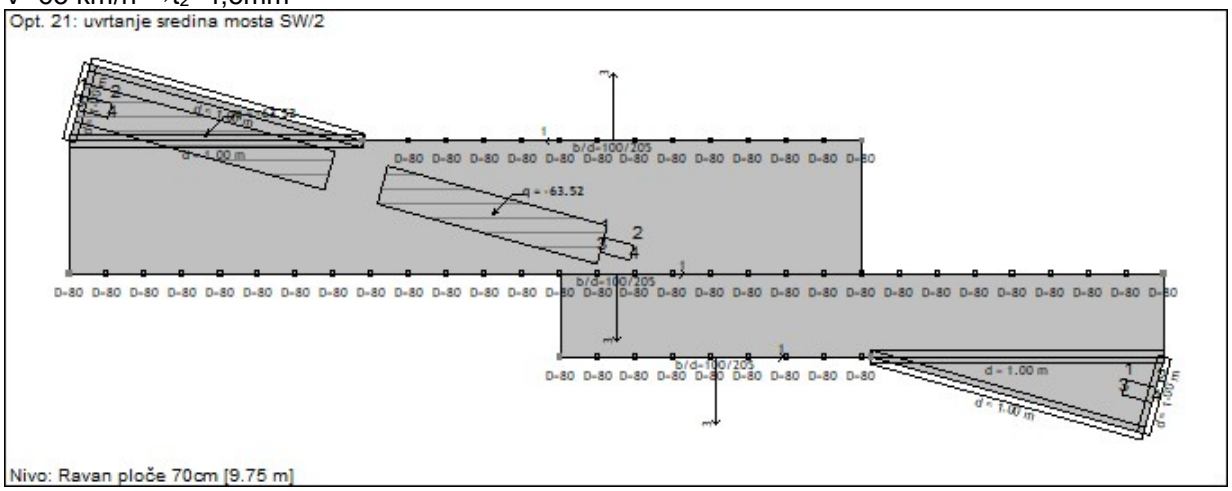
7.1.1. Вертикално убрзање конструкције моста / Vertical acceleration of the deck

Контрола вертикалног убрзања се треба проверити у случајевима када је неопходна динамичка анализа што за ову конструкцију није случај јер је фреквенција сопствених осцилација:
To ensure traffic safety, where a dynmnic analysis is necessary, the verification of maximuln peak deck acceleration due to rail traffic actions shall be regarded as a traffic safety requirement checked at the serviceability limit state for the prevention of track instability . In this case a dynmnic analysis is not necessary since the natural frequency of the construction is:

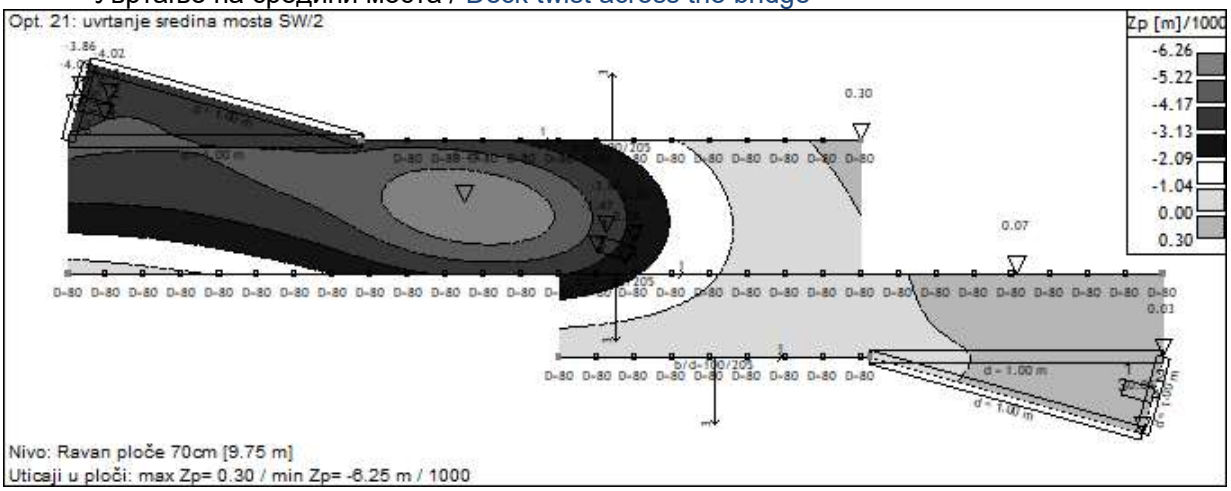
$n_{0,inf}$ = 3,6Hz < n_0=6,66Hz < $n_{0,sup}$=9,32Hz

7.1.2. Увртање коловозне конструкције моста / Deck twist

Провера ове деформације врши се у складу са таб.А2.7 стандарда SRPS EN1990:2012
The verification of this deformation is performed in accordance with table A2.7 in SRPS EN 1990:2012
V=65 km/h →t_2=4,5mm

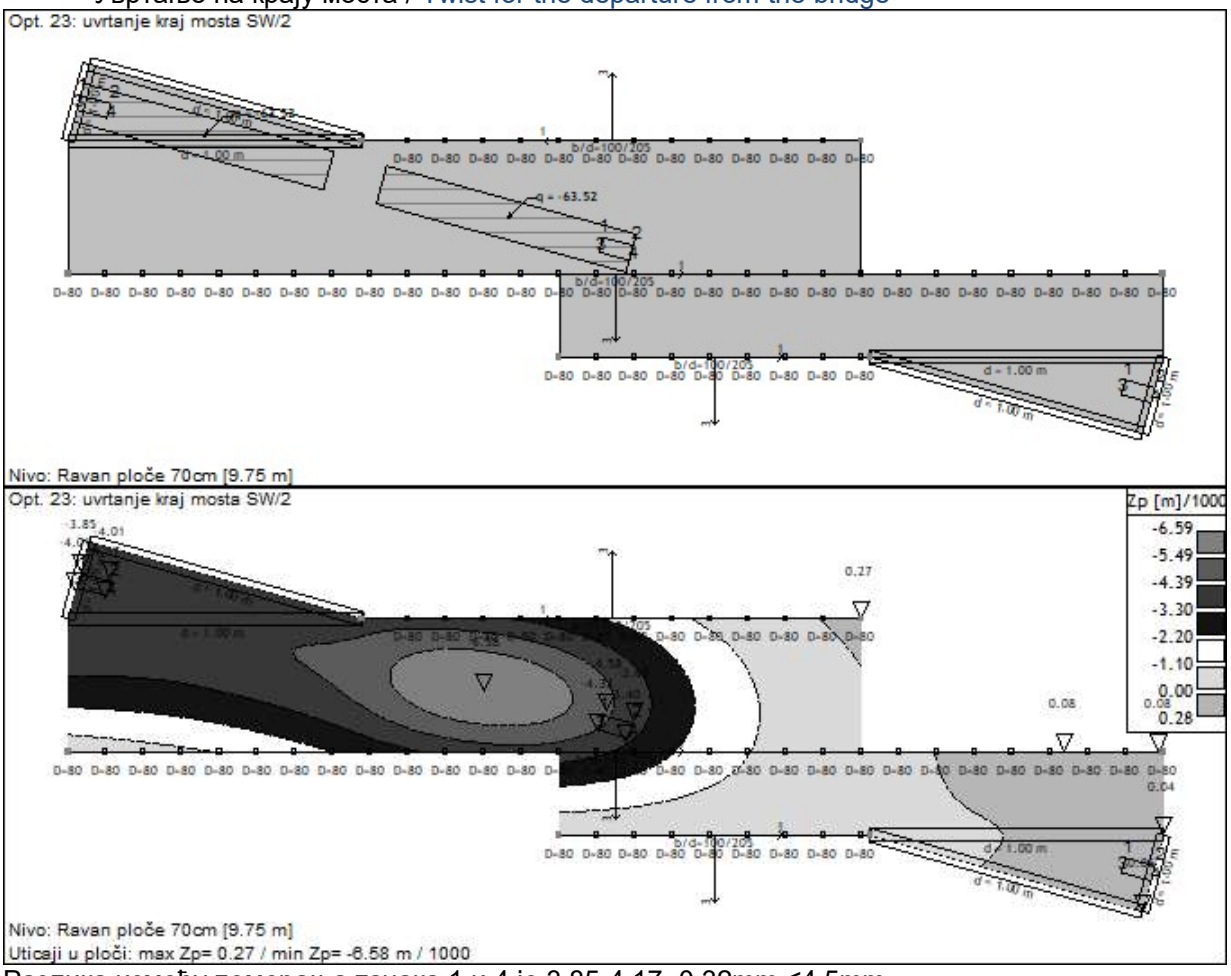


- Увртање на средини моста / Deck twist across the bridge



Разлика између померања тачака 1 и 4 је 3,66-2,58 =1,08mm ≤4,5mm
The difference between elevation of the points 1and 4 is 1,08mm ≤4,5mm

– Увртање на крају моста / Twist for the departure from the bridge

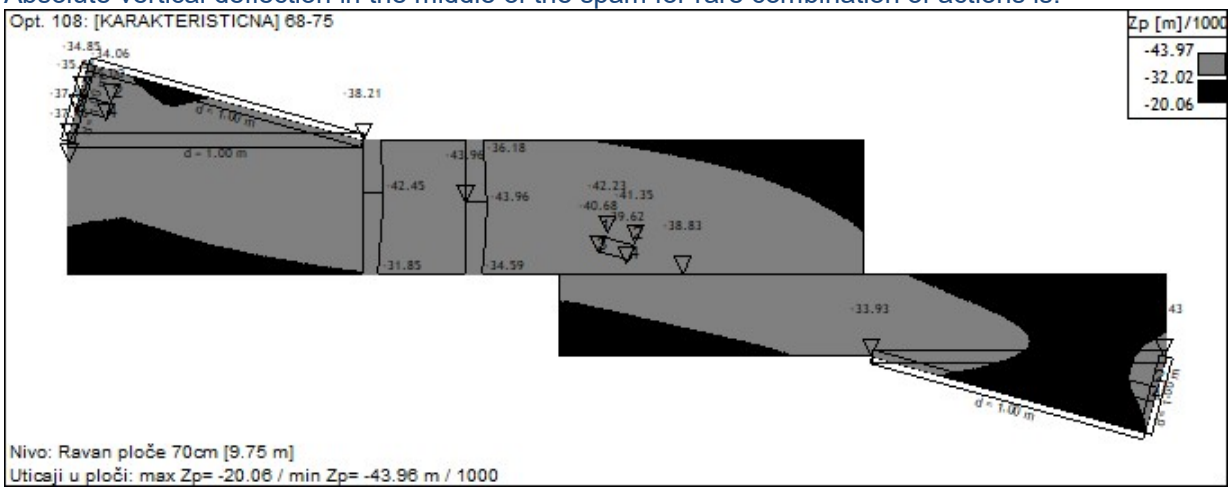


Разлика између померања тачака 1 и 4 је 3,85-4,17=0,32mm ≤4,5mm
The difference between elevation of the points 1and 4 is 0,32mm ≤4,5mm

7.1.3. *Вертикална деформација конструкције моста* / Vertical deformation of the deck

- Вертикална деформација / Vertical deformation

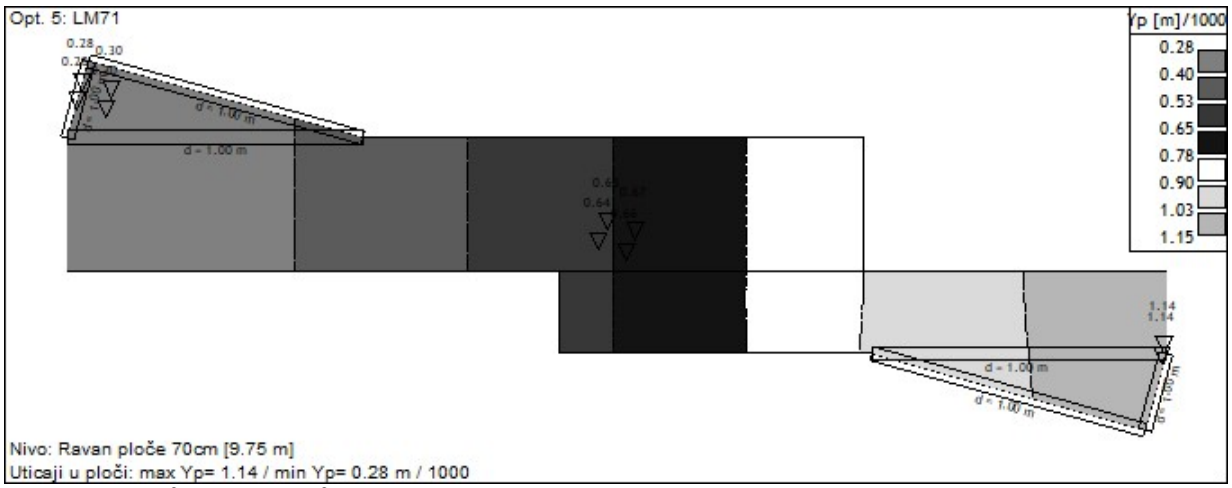
У складу са SRPS EN 1990:2012 највећи укупни вертикални угиб мерен дуж било којег колосека услед дејства од железничког саобраћаја не треба да прелази вредност L/600
In accordance with SRPS EN 1990: 2012, the maximum total vertical deflection measured along any track due to the effect of railway traffic should not exceed the value of L/600
δ_{doz}=12750/600=21,25mm
Апсолутни угиб у средини распона за карактеристичну комбинацију износи:
Absolute vertical deflection in the middle of the spam for rare combination of actions is:



δ_{max}=9,37mm< δ_{doz}=21,25mm

- Ротација / angular rotations

У складу са SRPS EN 1990/NA:2012 максимална ротација крајева једноколосечног моста је ограничена на 1,7*10^{-3} rad. Провера ротације се врши за оба модела оптерећења LM71 и SW/2. Приказан је само меродаван случај.
In accordance with SRPS EN 1990: 2012, the maximum angular rotation at the end of railway bridges should not exceed the value of 1,7*10^{-3} rad. The rotation check is performed for both load models LM71 and SW/2. Only the relevant case is shown.



θ_{max}=1,15*10^{-3}rad≤1,7*10^{-3}

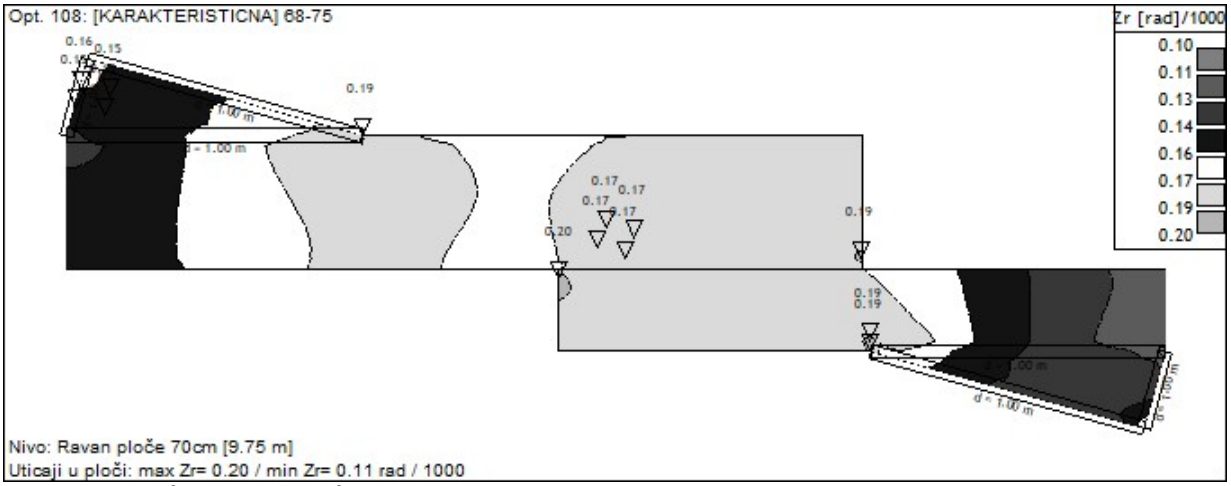
7.1.4. Попречне деформације и вибрације коловозне конструкције моста / Transverse deformation and vibration of the deck

Попречне деформације се проверавају за карактеристичну комбинацију и врши се провера хоризонталних ротација и максимална промена радијуса кривине.
Transverse deformations are checked for rare combination of actions. The horizontal rotations and the maximum change of the radius of curvature are checked.

- Хоризонталне ротације / **Horizontal rotation**

У складу са SRPS EN 1990:2012 (таб.A2.8) хоризонталне ротације су ограничене на вредност α=0,0035
In accordance with SRPS EN 1990: 2012 (table A2.8) maximum horizontal rotation are limited in value of α=0,0035

Дијаграм хоризонталних ротација за карактеристичну комбинацију
Horizontal rotation chart for rare combination of actions

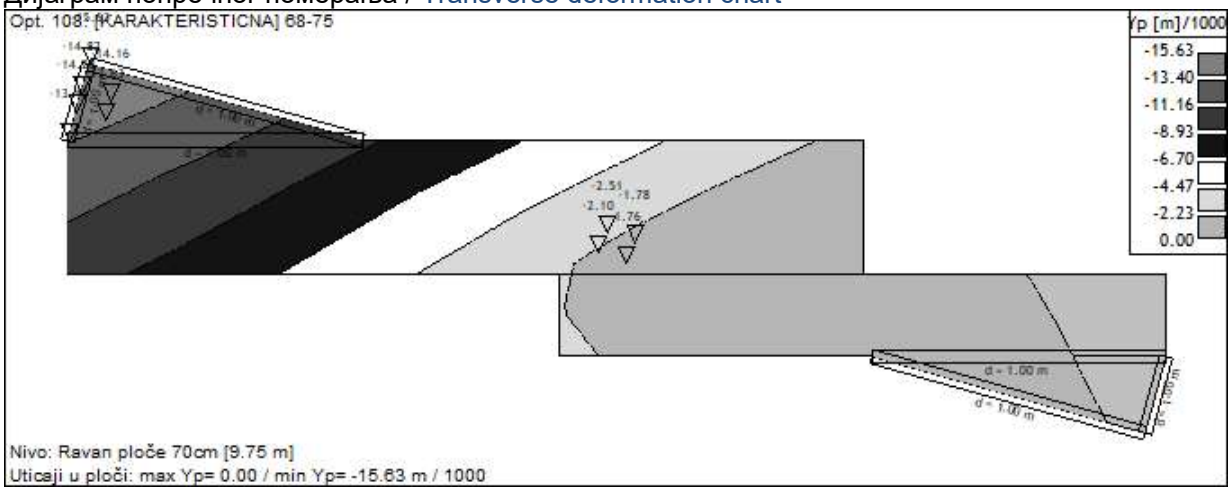


$\alpha_{max}=0,20*10^{-3}$rad ≤ $3,5*10^{-3}$ rad

- Промена радијуса кривине / Change of radius of curvature

Дозвољена промена радијуса кривине је r=1700m
Maximum change of radius of curvature is r=1700m
Промена радијуса кривине се рачуна помоћу формуле
The change of the radius of curvature may be detemlined using:
$r=L^2/(8*\delta_h)$ где је:
δ_h→ попречно померање / transverse deformation

Дијаграм попречног померања / Transverse deformation chart



$r=12{,}75^2/(8*0{,}01563)=1300m \leq 1700m$

- Фреквенција бочних вибрација / Frequency of lateral vibration

Први тон природне фреквенције бочних вибрација не треба да буде мањи од f_{h0}=1,2 Hz
За ову конструкцију се добија да је фреквенција 1.тона бочних вибрација 1,58Hz ≥ 1,2 Hz
The first natural frequency of lateral vibration of a span should not be less than f_{h0}=1,2 Hz.
For this construction, the frequency of the 1st tone of lateral vibrations is 1,58 Hz ≥ 1,2 Hz.

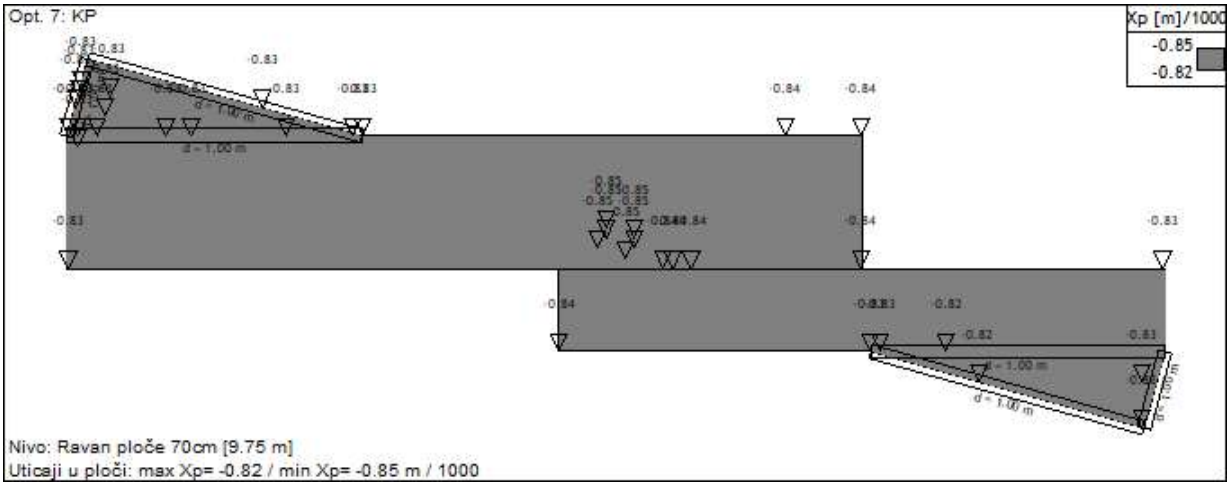
7.1.5. Уздужно померање / Longitudinal displacelnent of the deck

У оквиру ове контроле треба проверити да ли су следећа уздужна померања мања од дозвољених:
As part of this control, it should be checked that the following longitudinal displacements are less than allowed:
$\delta_B \rightarrow$ уздужно померање од сила кочења и покретања / longitudinal displacements due to traction and braking
$\delta_H \rightarrow$ уздужно померање од вертикалног саобраћајног оптерећења/ longitudinal displacements due to vertical traffic load

- Уздужно померање од сила кочења и покретања (δ_B) / Longitudinal displacements due to traction and braking

У складу са стандардом EN 1991-2 ово померање је ограничено на вредност $\delta_{B,doz.}$=5mm
In accordance with EN 1991-2 maximum longitudinal displacements are limited in value of $\delta_{B,doz.}$=5mm

Дијаграм хоризонталних померања од сила кочења и покретања
Longitudinal displacements chart due to traction and braking

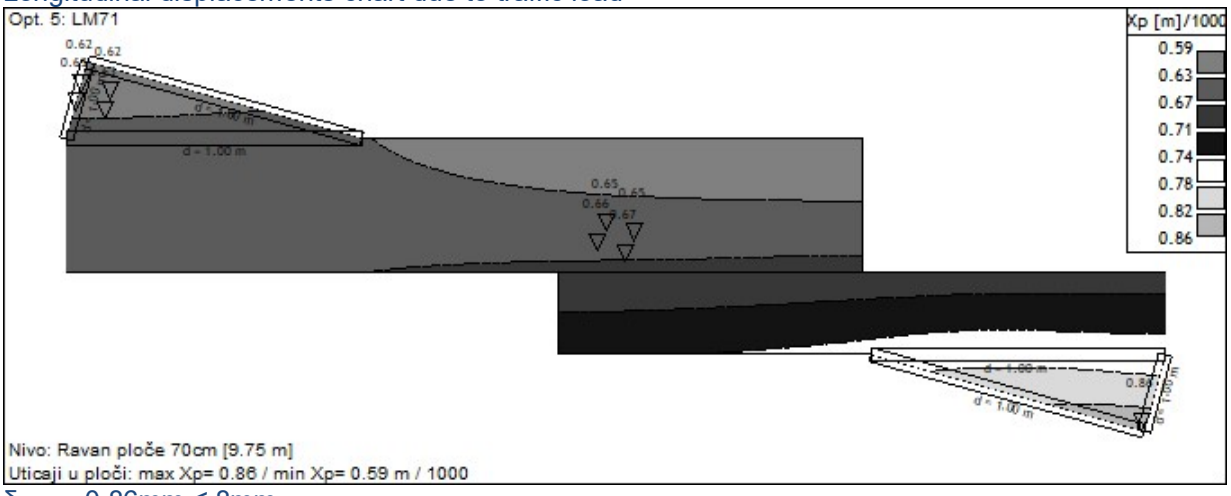


$\delta_{B,max}$=0,82mm ≤ 5mm

- Уздужно померање од вертикалног саобраћајног дејства (δ_H) / Longitudinal displacements due to vertical traffic load

Када се у комбинацији са вертикалним саобраћајним оптерећењем узму у обзир и подужне силе услед температурних промена између шина и моста, онда је максимално дозвољено уздужно померање δ_H=8mm.
When longitudinal forces due to temperature changes between the rails and the bridge are taken into account in combination with the vertical traffic load, then the maximum longitudinal displacements is δ_H=8mm.

Дијаграм уздужних померања услед саобраћајног оптерећења.
Longitudinal displacements chart due to traffic load



$\delta_{H,max}$=0,86mm ≤ 8mm

6.1 Критеријум удобности путника / Comfort criteria

Овај критеријум ће бити задовољен ако је угиб конструкције у дозвољеним границама, при чему се гранична вредност угиба утврђује у зависности од нивоа удобности. За врло добру удобност (када је вертикално убрзање b_v=1 m/s^2) а у складу са SRPS EN 1990:2012 (слика A2.3), може се констатовати да је за брзину од 65km/h L/δ=750.
f_{lim}=L/(750x0,7)=L/525
Овај критеријум се проверава за случај нормалног саобраћаја, са карактеристичном вредношћу оптерећења (LM 71) помноженом са коефицијентом динамичности, када је оптерећен само један колосек.
На основу дијаграма вертикалних померања који су дати у 7.1.3, јасно је да ће овај критеријум бити задовољен тј. вертикална померања су мања и од L/525=24,28mm.

This criteria will be met if the deflection of the structure is within the allowable limits, where the limit value of deflection is determined depending on the comfort level. For very good comfort (when the vertical acceleration is bv = 1 m / s2) and in accordance with SRPS EN 1990: 2012 (Figure A2.3), it can be stated that for a speed of 65km/h L / δ = 750.
f_{lim} = L / (750x0,7) = L / 525
This criteria is checked for the case of normal traffic, with the characteristic value of the load (LM 71) multiplied by the dynamic factor, when only one track is loaded.
Based on the vertical displacement diagrams given in 7.1.3, the case when both tracks are loaded it is clear that this criterion will be met i.e. vertical displacements are smaller than L / 525 = 24,28 mm.

Одговорни пројектант:

Зоран Луковић, дипл.грађ.инж.
лиценца бр. 310 3032 03

2/1.1.3.1.7 ГРАФИЧКА ДОКУМЕНТАЦИЈА

ОСНОВА / PLAN VIEW

P / S 1:100

КАРАКТЕРИСТИКЕ МАТЕРИЈАЛА
MATERIAL CHARACTERISTICS

Елемент Structure element	Бетон Concrete	Арматура Reinforcement	Заштитни слој Protection layer
Коловозна плоча са гредама Carriage slab & beams	C 35/45 XC4, XF3, VII, M200	B 500B	5.0 cm
Стубови и зидови Piers & walls	C 35/45 XC4, VI	B 500B	5.0 cm
Наглавне греде Pille caps	C 30/37	B 500B	5.0 cm
Шипови Pilles	C 30/37	B 500B	9.0 cm
Ивични венци и пешачке стазе Edge beam and foothpath	C 40/50 XC4, XF4, PVIII, MS-S2	B 500B	3.0 cm
Прелазна плоча Transition slab	C 12/15		
Бетон за пад Concrete layer for slope	C 20/25		
Бетон за заштиту хидроизолације Isolation concrete cover	C 16/20		
Подложни бетон Plain concrete	C 12/15		
Temelj i obloga kegle Slope lining foundation and plates	C 20/25		

03		
02		
01		
Број/Number	Датум / Date	Опис / Description

Ревизиони блок: / Revision block:

China Railway Design Corporation Serbia
Ogranak Beograd
Косте Рацина 16б; 11000 Београд; Србија

Организациона јединица: ГРАЂЕВИНАРСТВО И САОБРАЋАЈ
Organization unit: DEPARTMENT OF CIVIL AND TRANSPORTATION

Одговорни пројектант: / Responsible designer:
Зоран Луковић, дипл.грађ.инж
лиценца број:/ license No.: 310 3032 03

Сарадници: / Associates:

Унутрашња контрола: / Internal control:
Hou Jieping. Master & Shi Wei. Bachelor

Главни пројектант: / Chief designer:
др Љиљана Милић Марковић, дипл.грађ.инж.

Руководилац организационе јединице: / Manager of organization unit:
др Љиљана Милић Марковић, дипл.грађ.инж.

Инвеститор пројекта: / Investor:
" ИНФРАСТРУКТУРА ЖЕЛЕЗНИЦЕ СРБИЈЕ " А.Д. / " INFRASTRUCTURE RAILWAYS OF SERBIA " JSC
Немањина 6/IV, Београд / Nemanjina Street 6/IV, Belgrade

Наручилац пројекта: / Employer:
China Railway International Corporation Ltd.
No.10 Fuxing Road,Haidian District,Beijing
P.R China, 100844
China Communication Construction Company Ltd. (CCCC)
No.85 Deshengmenwai Street,Xicheng District,Beijing
P.R China, 100088

Објекат: /Structure:
ПРУГА БЕОГРАД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
BELGRADE - SUBOTICA - STATE BORDER (KELEBIA) RAILWAY LINE
SECTION : NOVI SAD - SUBOTICA - STATE BORDER (KELEBIA)

Део пројекта: / Part of Design:
ПРОЈЕКАТ КОНСТРУКЦИЈА / DESIGN OF CONSTRUCTION

2/1.1.3.1 Пројекат галерије на км 78+377.03
2/1.1.3.1 Gallery design at km 78+377.03

Цртеж: / Drawing:	Размера: / Scale:
ОСНОВА PLAN VIEW	1:100

Врста тех. док.: / Type of tech. docum.:	датум:/date:	Цртеж бр./Drawing No.:
ПГД / DCP	04.2021.	2020-001-ГС-2/1.1.3.1.7.Ц01.

ОСНОВА ТЕМЕЉА / FOUNDATIONS PLAN VIEW

P / S 1:100

КАРАКТЕРИСТИКЕ МАТЕРИЈАЛА
MATERIAL CHARACTERISTICS

Елемент Structure element	Бетон Concrete	Арматура Reinforcement	Заштитни слој Protection layer
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Подложни бетон Plain concrete	C 12/15		
Temelj i obloga kegle Slope lining foundation and plates	C 20/25		

Број/Number	Датум / Date	Опис / Description
03		
02		
01		

Ревизиони блок: / Revision block:

China Railway Design Corporation Serbia
Ogranak Beograd
Косте Рацина 16б; 11000 Београд; Србија

Организациона јединица: ГРАЂЕВИНАРСТВО И САОБРАЋАЈ
Organization unit: DEPARTMENT OF CIVIL AND TRANSPORTATION

Одговорни пројектант:
Responsible designer:
Зоран Луковић, дипл.грађ.инж
лиценца број:/ license No.: 310 3032 03

Сарадници: / Associates:

Унутрашња контрола: / Internal control:
Hou Jieping. Master & Shi Wei. Bachelor

Главни пројектант: / Chief designer:
др Љиљана Милић Марковић, дипл.грађ.инж.

Руководилац организационе јединице:
Manager of organization unit:
др Љиљана Милић Марковић, дипл.грађ.инж.

Инвеститор пројекта: / Investor:
" ИНФРАСТРУКТУРА ЖЕЛЕЗНИЦЕ СРБИЈЕ " А.Д.
/ " INFRASTRUCTURE RAILWAYS OF SERBIA " JSC
Немањина 6/IV, Београд / Nemanjina Street 6/IV, Belgrade

Наручилац пројекта: / Employer:
中国铁路国际有限公司 CHINA RAILWAY International Co., Ltd.
China Railway International Corporation Ltd.
No.10 Fuxing Road,Haidian District,Beijing
P.R China, 100844
CHINA COMMUNICATIONS CONSTRUCTION COMPANY LIMITED
China Communication Construction Company Ltd. (CCCC)
No.85 Deshengmenwai Street,Xicheng District,Beijing
P.R China, 100088

Објекат: /Structure:
ПРУГА БЕОГРАД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
BELGRADE - SUBOTICA - STATE BORDER (KELEBIA) RAILWAY LINE
SECTION : NOVI SAD - SUBOTICA - STATE BORDER (KELEBIA)

Део пројекта: / Part of Design:
ПРОЈЕКАТ КОНСТРУКЦИЈА / DESIGN OF CONSTRUCTION

2/1.1.3.1 Пројекат галерије на км 78+377.03
2/1.1.3.1 Gallery design at km 78+377.03

Цртеж: / Drawing:
ОСНОВА ТЕМЕЉА
FOUNDATIONS PLAN VIEW

Размера: Scale: **1:100**

Врста тех. док.: Type of tech. docum.:	датум:/date:	Цртеж бр./Drawing No.:
ПГД / DCP	**04.2021.**	**2020-001-ГС-2/1.1.3.1.7.Ц02.**

ПЛАН ОДВОДЊАВАЊА / LEVELS OF THE CONCRETE LAYER FOR SLOPE

P / S 1:100

сливник тип / gully type 1 - železnički slivnik / gully for railway bridges
сливник тип / gully type 2 - одговарајући мостовски сливник за одводњавање површина без саобраћаја / apropriate bridge gully for drainage of areas without traffic

КАРАКТЕРИСТИКЕ МАТЕРИЈАЛА
MATERIAL CHARACTERISTICS

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Број/Number	Датум / Date	Опис / Description
03		
02		
01		

Ревизиони блок: / Revision block:

China Railway Design Corporation Serbia
Ogranak Beograd
Косте Рацина 16б; 11000 Београд; Србија

Организациона јединица: ГРАЂЕВИНАРСТВО И САОБРАЋАЈ
Organization unit: DEPARTMENT OF CIVIL AND TRANSPORTATION

Одговорни пројектант: / Responsible designer:
Зоран Луковић, дипл.грађ.инж
лиценца број:/ license No.: 310 3032 03

Сарадници: / Associates:

Унутрашња контрола: / Internal control:
Hou Jieping. Master & Shi Wei. Bachelor

Главни пројектант: / Chief designer:
др Љиљана Милић Марковић, дипл.грађ.инж.

Руководилац организационе јединице: / Manager of organization unit:
др Љиљана Милић Марковић, дипл.грађ.инж.

Инвеститор пројекта: / Investor:
" ИНФРАСТРУКТУРА ЖЕЛЕЗНИЦЕ СРБИЈЕ " А.Д. / " INFRASTRUCTURE RAILWAYS OF SERBIA " JSC
Немањина 6/IV, Београд / Nemanjina Street 6/IV, Belgrade

Наручилац пројекта: / Employer:
China Railway International Corporation Ltd.
No.10 Fuxing Road,Haidian District,Beijing
P.R China, 100844
China Communication Construction Company Ltd. (CCCC)
No.85 Deshengmenwai Street,Xicheng District,Beijing
P.R China, 100088

Објекат: /Structure:
ПРУГА БЕОГРАД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
BELGRADE - SUBOTICA - STATE BORDER (KELEBIA) RAILWAY LINE
SECTION : NOVI SAD - SUBOTICA - STATE BORDER (KELEBIA)

Део пројекта: / Part of Design:
ПРОЈЕКАТ КОНСТРУКЦИЈА / DESIGN OF CONSTRUCTION

2/1.1.3.1 Пројекат галерије на км 78+377.03
2/1.1.3.1 Gallery design at km 78+377.03

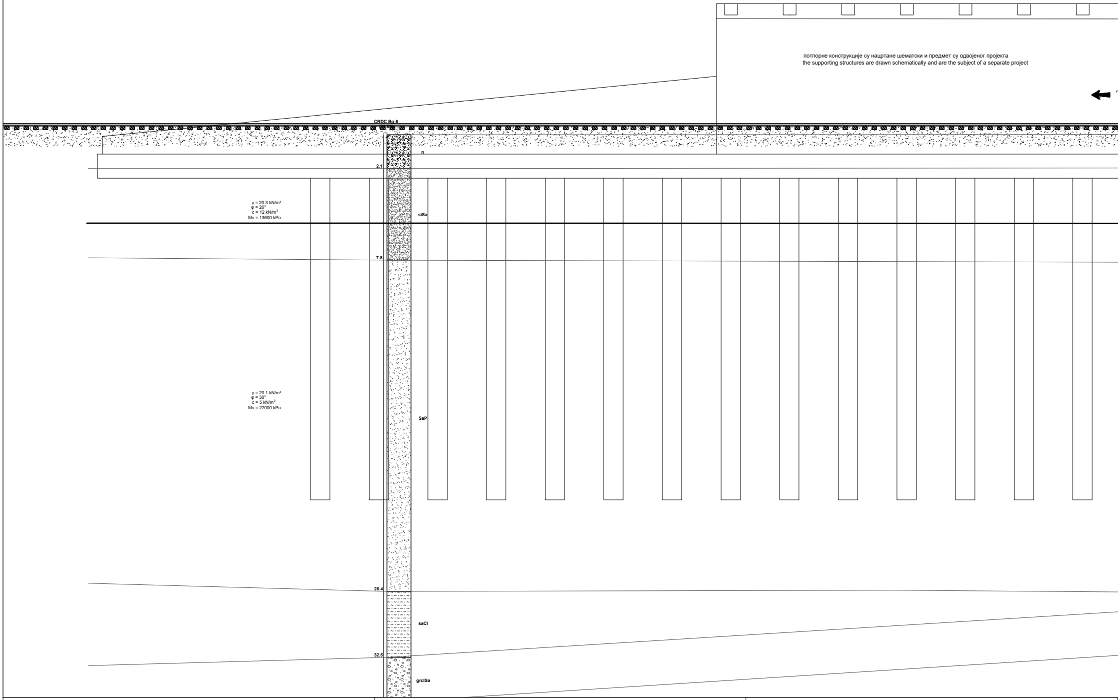
Цртеж: / Drawing:
ПЛАН ОДВОДЊАВАЊА
LEVELS OF THE CONCRETE LAYER FOR SLOPE

Размера: Scale: 1:100

Врста тех. док.: Type of tech. docum.:	датум:/date:	Цртеж бр./Drawing No.:
ПГД / DCP	04.2021.	2020-001-ГС-2/1.1.3.1.7.Ц03.

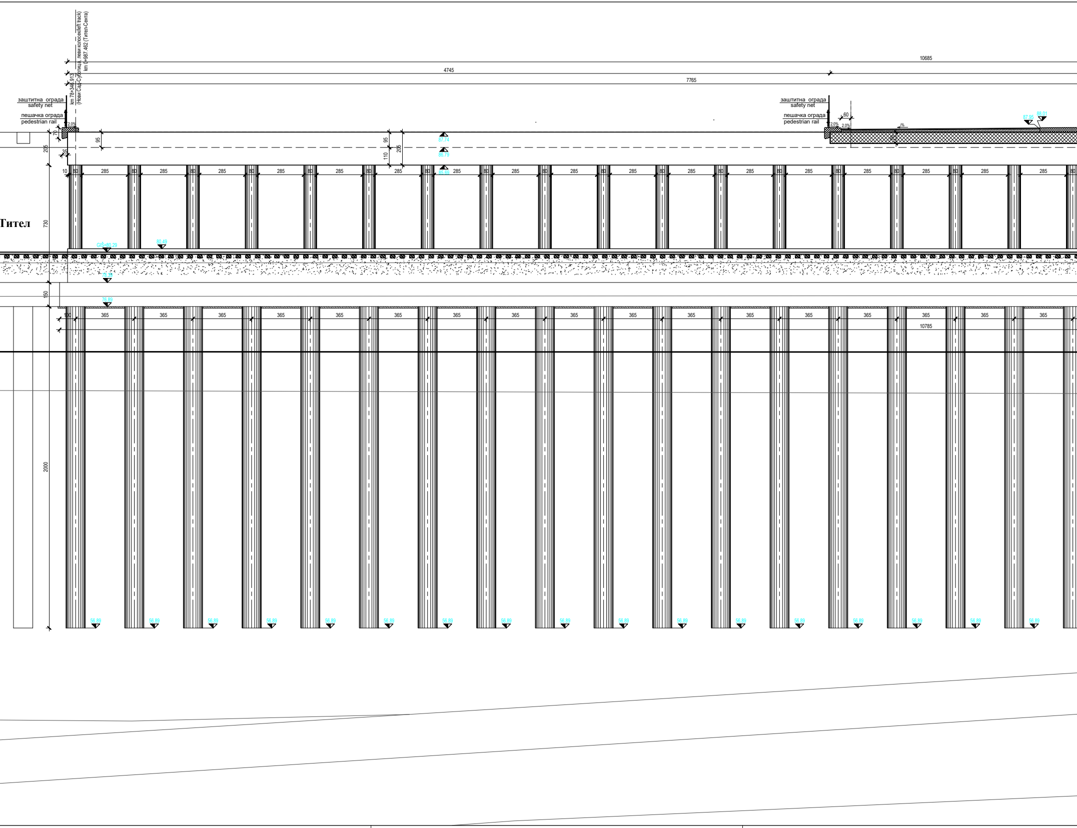
PODUŽNI ПРЕСЕК 3-3
LONGITUDINAL SECTION 3-3

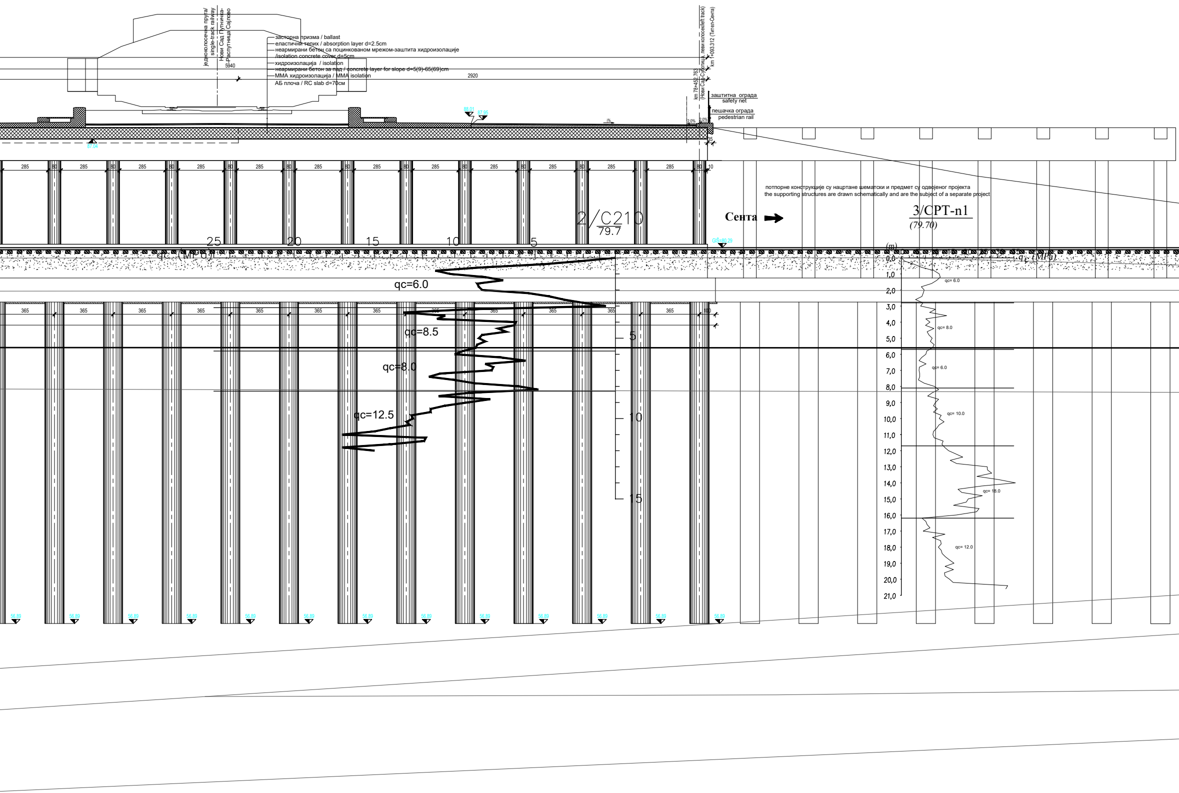
P/S 1:125



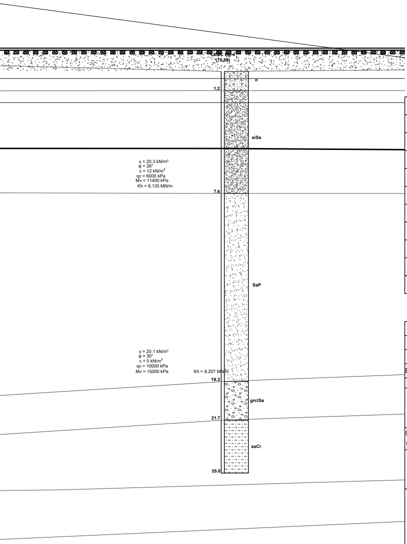
потпорне конструкције су нацртане шематски и предмет су одвојеног пројекта
the supporting structures are drawn schematically and are the subject of a separate project

CRDC Bg-5
n
2.1
γ = 20.3 kN/m³
φ = 26°
c = 12 kN/m²
Mv = 13600 kPa
siSa
7.8
γ = 20.1 kN/m³
φ = 30°
c = 5 kN/m²
Mv = 27000 kPa
SaP
28.4
saCl
32.5
grclSa


km 78+346.913 (Нови Сад-Суботица, леви колосек/left track)
km 0+987.462 (Тител-Сента)
10685
4745
7765
заштитна ограда
safety net
пешачка ограда
pedestrian rail
2.0%
60
2.0%
i%
87.95
88.01
70
205
95
35
95
110
205
87.74
86.79
85.69
10
80
285
Тител
730
GIŠ=80.29
80.49
78.39
150
76.89
100
365
10785
2000
56.89


једноколосечна пруга/
single-track railway
Нови Сад Путничка-
-Распутница Сајлово
5940
засторна призма / ballast
еластични тепих / absorption layer d=2.5cm
неармирани бетон са поцинкованом мрежом-заштита хидроизолације
/isolation concrete cover d=5cm
хидроизолација / isolation
неармирани бетон за пад / concrete layer for slope d=5(9)-65(69)cm
MMA хидроизолација / MMA isolation
АБ плоча / RC slab d=70см
2920
88.01
87.95
87.04
2.0%
km 78+452.763
(Нови Сад-Суботица, леви колосек/left track)
km 1+093.312 (Тител-Сента)
заштитна ограда
safety net
пешачка ограда
pedestrian rail
35
285
80
10
365
2/C210
79.7
25
20
15
10
5
qc (MPa)
qc=6.0
qc=8.5
qc=8.0
qc=12.5
15
Сента
3/CPT-n1
(79.70)
GIŠ=80.29
(m)
q_c (MPa)
0,0
1,0
2,0
3,0
4,0
5,0
6,0
7,0
8,0
9,0
10,0
11,0
12,0
13,0
14,0
15,0
16,0
17,0
18,0
19,0
20,0
21,0
qc= 6.0
qc= 8.0
qc= 6.0
qc= 10.0
qc= 18.0
qc= 12.0
56.89

потпорне конструкције су нацртане шематски и предмет су одвојеног пројекта
the supporting structures are drawn schematically and are the subject of a separate project


CBDC Bg-4
(78,89)
n
1.2
siSa
γ = 20.3 kN/m³
φ = 26°
c = 12 kN/m²
qc = 6000 kPa
Mv = 11400 kPa
Kh = 6.135 MN/m
7.6
SaP
γ = 20.1 kN/m³
φ = 30°
c = 5 kN/m²
qc = 10000 kPa
Mv = 15000 kPa
Kh = 8.207 MN/m
19.3
grclSa
21.7
saCl
25.0

КАРАКТЕРИСТИКЕ МАТЕРИЈАЛА
MATERIAL CHARACTERISTICS

Елемент Structure element	Бетон Concrete	Арматура Reinforcement	Заштитни слој Protection layer
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Подложни бетон Plain concrete	C 12/15		
Temelj i obloga kegle Slope lining foundation and plates	C 20/25		

Број/Number	Датум / Date	Опис / Description
03		
02		
01		

Ревизиони блок: / Revision block:

中国铁设
CRDC
China Railway Design Corporation Serbia
Ogranak Beograd
Косте Рацина 16б; 11000 Београд; Србија

Организациона јединица: ГРАЂЕВИНАРСТВО И САОБРАЋАЈ
Organization unit: DEPARTMENT OF CIVIL AND TRANSPORTATION

Одговорни пројектант:
Responsible designer:
Зоран Луковић, дипл.грађ.инж
лиценца број:/ license No.: 310 3032 03

Сарадници: / Associates:

Унутрашња контрола: / Internal control:
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Главни пројектант: / Chief designer:
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Руководилац организационе јединице:
Manager of organization unit:
др Љиљана Милић Марковић, дипл.грађ.инж.

Инвеститор пројекта: / Investor:
" ИНФРАСТРУКТУРА ЖЕЛЕЗНИЦЕ СРБИЈЕ " А.Д.
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P.R China, 100088

Објекат: /Structure:
ПРУГА БЕОГРАД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)

BELGRADE - SUBOTICA - STATE BORDER (KELEBIA) RAILWAY LINE
SECTION : NOVI SAD - SUBOTICA - STATE BORDER (KELEBIA)

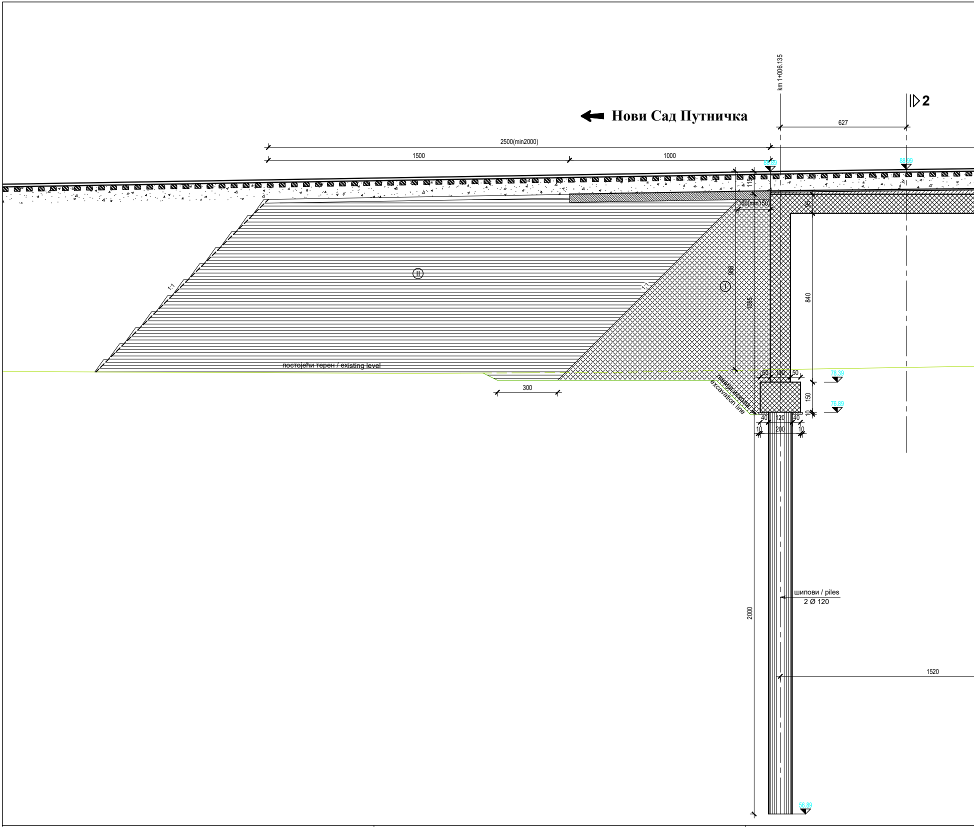
Део пројекта: / Part of Design:
ПРОЈЕКАТ КОНСТРУКЦИЈА / DESIGN OF CONSTRUCTION

2/1.1.3.1 Пројекат галерије на км 78+377.03
2/1.1.3.1 Gallery design at km 78+377.03

Цртеж: / Drawing:
ПОДУЖНИ ПРЕСЕК 3-3
LONGITUDINAL SECTION 3-3

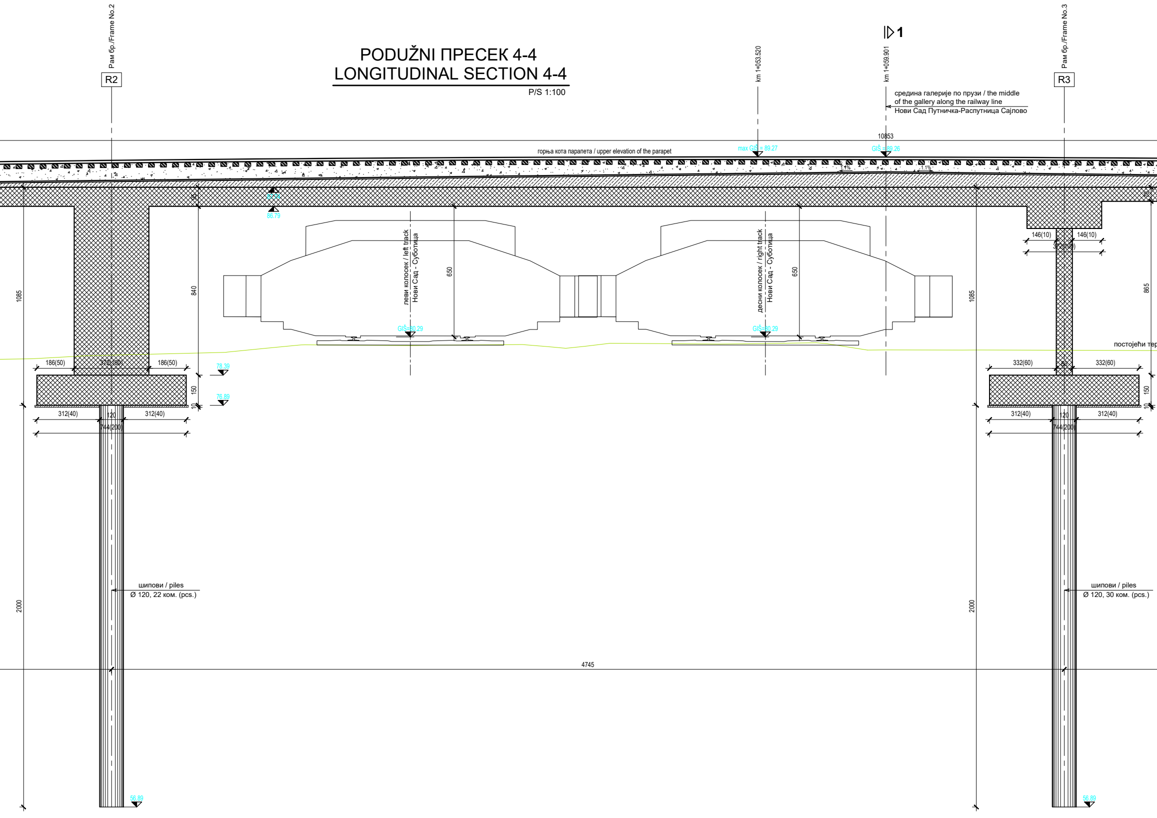
Размера:
Scale:
1:125

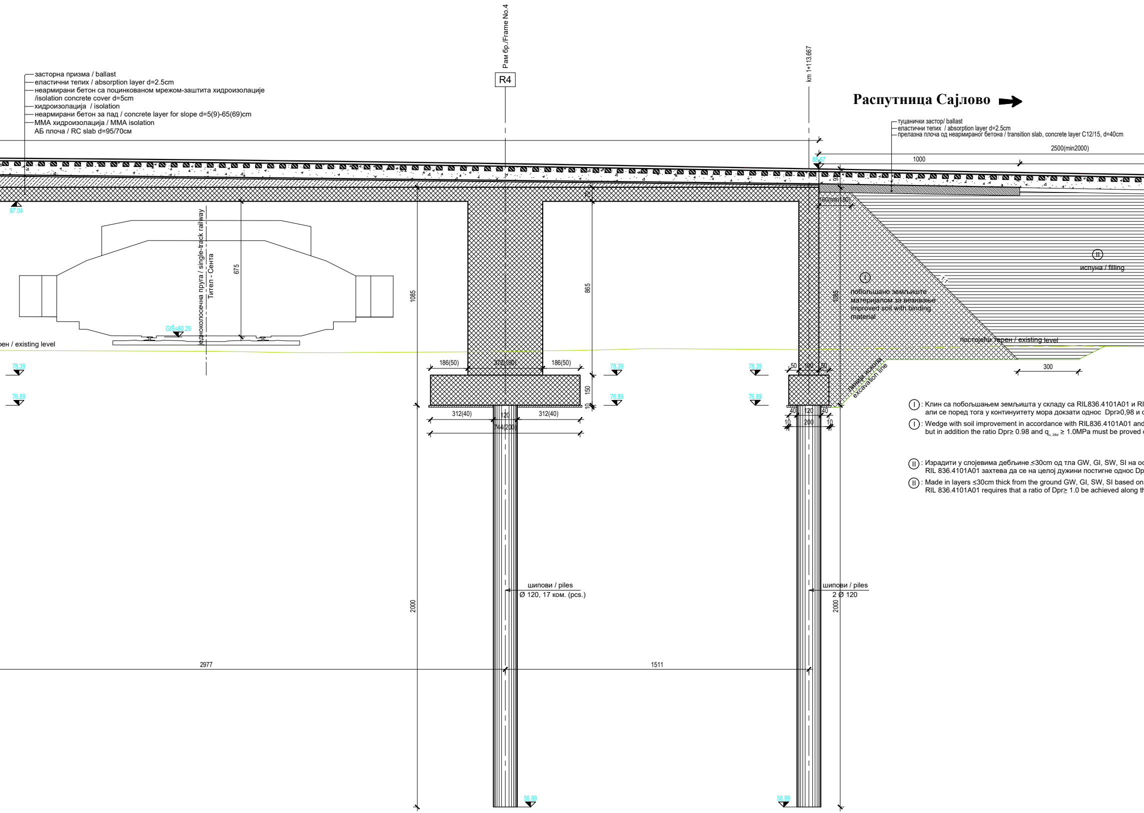
Врста тех. док.: Type of tech. docum.:	датум:/date:	Цртеж бр./Drawing No.:
ПГД / DCP	04.2021.	2020-001-ГС-2/1.1.3.1.7.Ц04.


km 1+006.135
2
← Нови Сад Путничка
627
2500(min2000)
1500
1000
88.89
88.89
115
160(min150)
50
908
1085
840
II
I
1:1
1:1
постојећи терен / existing level
300
линија ископа
excavation line
50
100
50
78.39
150
76.89
10
40
120
40
10
200
10
шипови / piles
2 Ø 120
2000
1520
56.89

PODUŽNI ПРЕСЕК 4-4
LONGITUDINAL SECTION 4-4

P/S 1:100


Рам бр./Frame No.2
R2
Рам бр./Frame No.3
R3
km 1+053.520
km 1+059.901
1
средина галерије по прузи / the middle of the gallery along the railway line
Нови Сад Путничка-Распутница Сајлово
10853
горња кота парапета / upper elevation of the parapet
max GIŠ = 89.27
GIŠ = 89.26
1.1%
1.1%
87.74
86.79
50
70
леви колосек / left track
Нови Сад - Суботица
десни колосек / right track
Нови Сад - Суботица
650
650
840
1085
1085
865
GIŠ=80.29
GIŠ=80.29
постојећи тер
186(50)
372(180)
186(50)
146(10)
146(10)
372(100)
332(60)
80
332(60)
78.39
76.89
150
150
10
10
312(40)
120
312(40)
744(200)
312(40)
120
312(40)
744(200)
шипови / piles
Ø 120, 22 ком. (pcs.)
шипови / piles
Ø 120, 30 ком. (pcs.)
2000
2000
4745
56.89
56.89

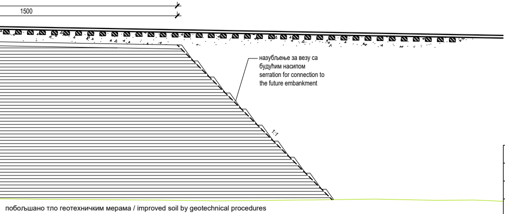

засторна призма / ballast
еластични тепих / absorption layer d=2.5cm
неармирани бетон са поцинкованом мрежом-заштита хидроизолације /isolation concrete cover d=5cm
хидроизолација / isolation
неармирани бетон за пад / concrete layer for slope d=5(9)-65(69)cm
ММА хидроизолација / MMA isolation
АБ плоча / RC slab d=95/70см
Рам бр./Frame No.4
R4
km 1+113.667
Распутница Сајлово
туцанички застор/ ballast
еластични тепих / absorption layer d=2.5cm
прелазна плоча од неармираног бетона / transition slab, concrete layer C12/15, d=40cm
2500(min2000)
1000
88.67
87.04
96
70
160(min150)
једноколосечна пруга / single-track railway
Тител - Сента
675
GIŠ=80.29
ен / existing level
1085
865
1085
II
испуна / filling
I
побољшано земљиште материјалом за везивање
improved soil with binding material
постојећи терен / existing level
линија ископа
excavation line
300
78.39
76.89
78.39
76.89
78.39
76.89
186(50)
372(100)
186(50)
150
10
312(40)
120
312(40)
744(200)
50
100
50
40
120
40
10
200
10
шипови / piles
Ø 120, 17 ком. (pcs.)
шипови / piles
2 Ø 120
2000
2000
2977
1511
56.89
56.89

Ⅰ : Клин са побољшањем земљишта у складу са RIL836.4101A01 и RI
али се поред тога у континуитету мора доказати однос Dpr≥0,98 и c

Ⅰ : Wedge with soil improvement in accordance with RIL836.4101A01 and
but in addition the ratio Dpr≥ 0.98 and $q_{u, 28d}$ ≥ 1.0MPa must be proved c

Ⅱ : Израдити у слојевима дебљине ≤30cm од тла GW, GI, SW, SI на ос
RIL 836.4101A01 захтева да се на целој дужини постигне однос Dp

Ⅱ : Made in layers ≤30cm thick from the ground GW, GI, SW, SI based on
RIL 836.4101A01 requires that a ratio of Dpr≥ 1.0 be achieved along th


1500
назубљење за везу са
будућим насипом
serration for connection to
the future embankment
1:1
побољшано тло геотехничким мерама / improved soil by geotechnical procedures

L836.4101A07,
$_{u,\ 28d}$ ≥1,0MPa.
RIL836.4101A07,
continuously.

снову DIN 18196.
r≥1,0.
DIN 18196.
ne entire length.

КАРАКТЕРИСТИКЕ МАТЕРИЈАЛА
MATERIAL CHARACTERISTICS

Елемент Structure element	Бетон Concrete	Арматура Reinforcement	Заштитни слој Protection layer
Коловозна плоча са гредама Carriage slab & beams	C 35/45 XC4, XF3, VII, M200	B 500B	5.0 cm
Стубови и зидови Piers & walls	C 35/45 XC4, VI	B 500B	5.0 cm
Наглавне греде Pille caps	C 30/37	B 500B	5.0 cm
Шипови Pilles	C 30/37	B 500B	9.0 cm
Ивични венци и пешачке стазе Edge beam and foothpath	C 40/50 XC4, XF4, PVIII, MS-S2	B 500B	3.0 cm
Прелазна плоча Transition slab	C 12/15		
Бетон за пад Concrete layer for slope	C 20/25		
Бетон за заштиту хидроизолације Isolation concrete cover	C 16/20		
Подложни бетон Plain concrete	C 12/15		
Temelj i obloga kegle Slope lining foundation and plates	C 20/25		

03		
02		
01		
Број/Number	Датум / Date	Опис / Description

Ревизиони блок: / Revision block:

中国铁设
CRDC
China Railway Design Corporation Serbia
Ogranak Beograd
Косте Рацина 16б; 11000 Београд; Србија

Организациона јединица: ГРАЂЕВИНАРСТВО И САОБРАЋАЈ
Organization unit: DEPARTMENT OF CIVIL AND TRANSPORTATION

Одговорни пројектант:
Responsible designer:
Зоран Луковић, дипл.грађ.инж
лиценца број:/ license No.: 310 3032 03

Сарадници: / Associates:

Унутрашња контрола: / Internal control:
Hou Jieping. Master & Shi Wei. Bachelor

Главни пројектант: / Chief designer:
др Љиљана Милић Марковић, дипл.грађ.инж.

Руководилац организационе јединице:
Manager of organization unit:
др Љиљана Милић Марковић, дипл.грађ.инж.

Инвеститор пројекта: / Investor:
" ИНФРАСТРУКТУРА ЖЕЛЕЗНИЦЕ СРБИЈЕ " А.Д.
/ " INFRASTRUCTURE RAILWAYS OF SERBIA " JSC
Немањина 6/IV, Београд / Nemanjina Street 6/IV, Belgrade

Наручилац пројекта: / Employer:
中国铁路国际有限公司
CHINA RAILWAY International Co., Ltd.
China Railway International Corporation Ltd.
No.10 Fuxing Road,Haidian District,Beijing
P.R China, 100844

CHINA COMMUNICATIONS CONSTRUCTION COMPANY LIMITED
China Communication Construction Company Ltd. (CCCC)
No.85 Deshengmenwai Street,Xicheng District,Beijing
P.R China, 100088

Објекат: /Structure:
ПРУГА БЕОГРАД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)

BELGRADE - SUBOTICA - STATE BORDER (KELEBIA) RAILWAY LINE
SECTION : NOVI SAD - SUBOTICA - STATE BORDER (KELEBIA)

Део пројекта: / Part of Design:
ПРОЈЕКАТ КОНСТРУКЦИЈА / DESIGN OF CONSTRUCTION

2/1.1.3.1 Пројекат галерије на км 78+377.03
2/1.1.3.1 Gallery design at km 78+377.03

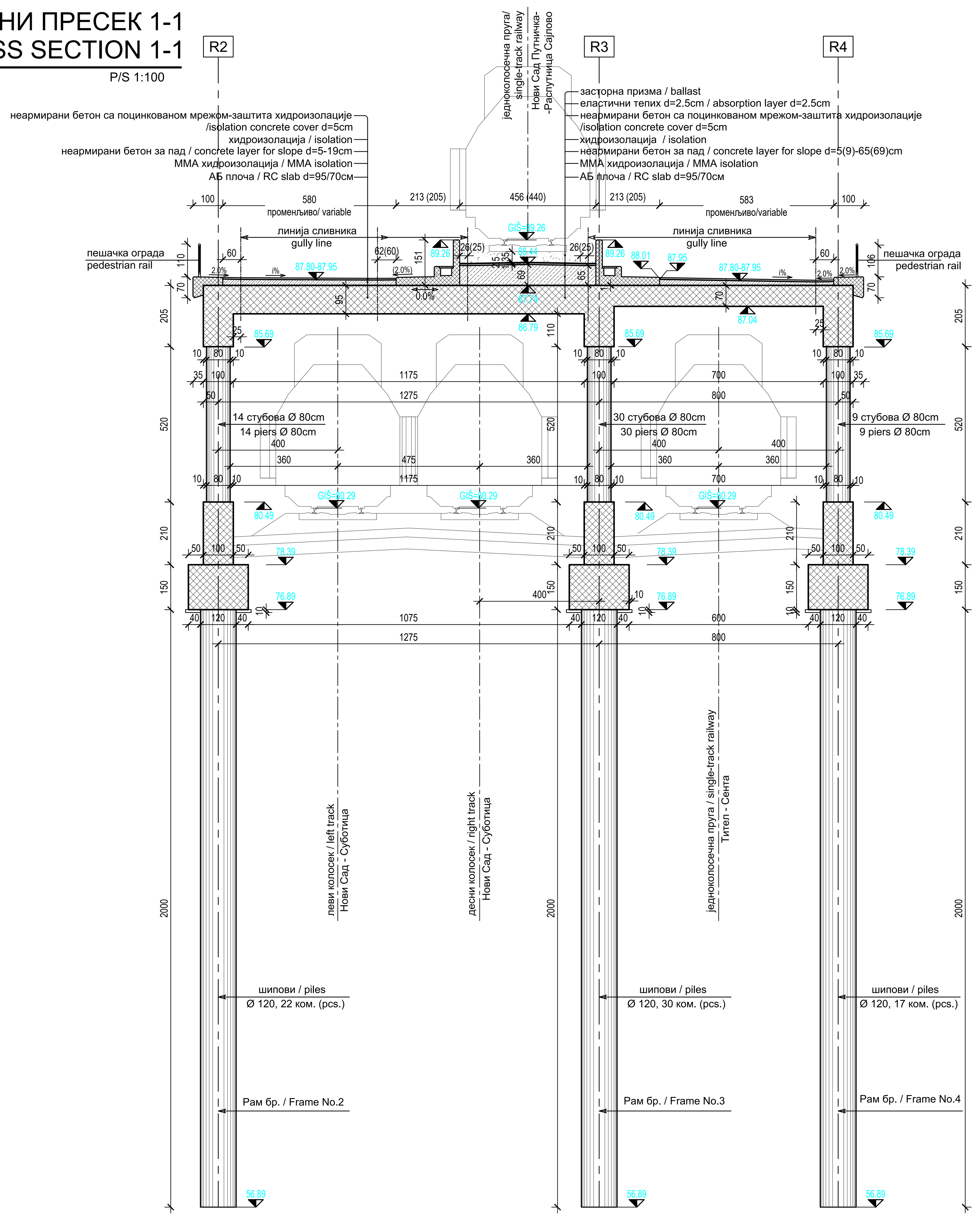
Цртеж:/ Drawing:
ПОДУЖНИ ПРЕСЕК 4-4
LONGITUDINAL SECTION 4-4

Размера:
Scale:
1:100

Врста тех. док.: Type of tech. docum.:	датум:/date:	Цртеж бр./Drawing No.:
ПГД / DCP	04.2021.	2020-001-ГС-2/1.1.3.1.7.Ц05.

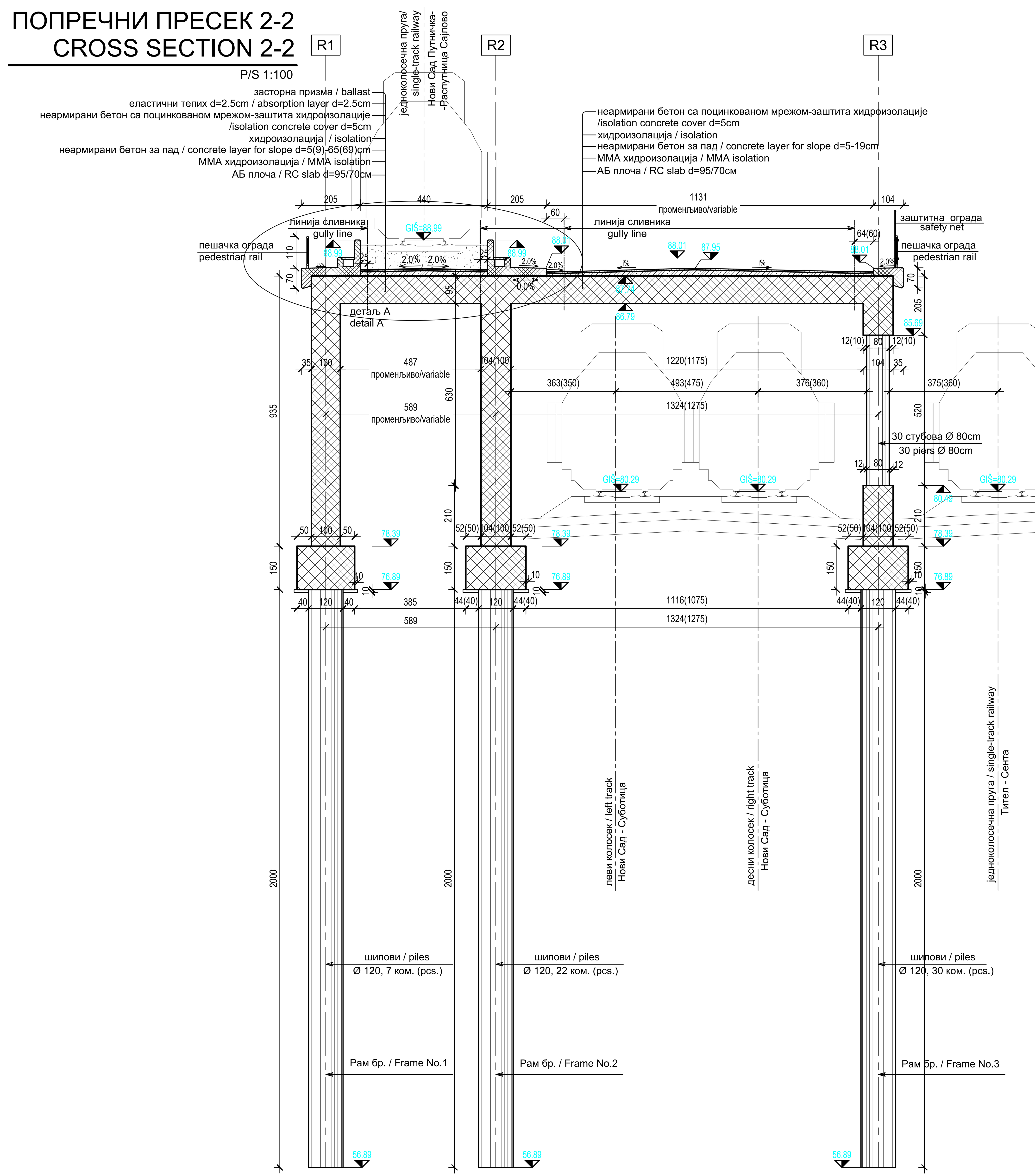
ПОПРЕЧНИ ПРЕСЕК 1-1
CROSS SECTION 1-1

P/S 1:100



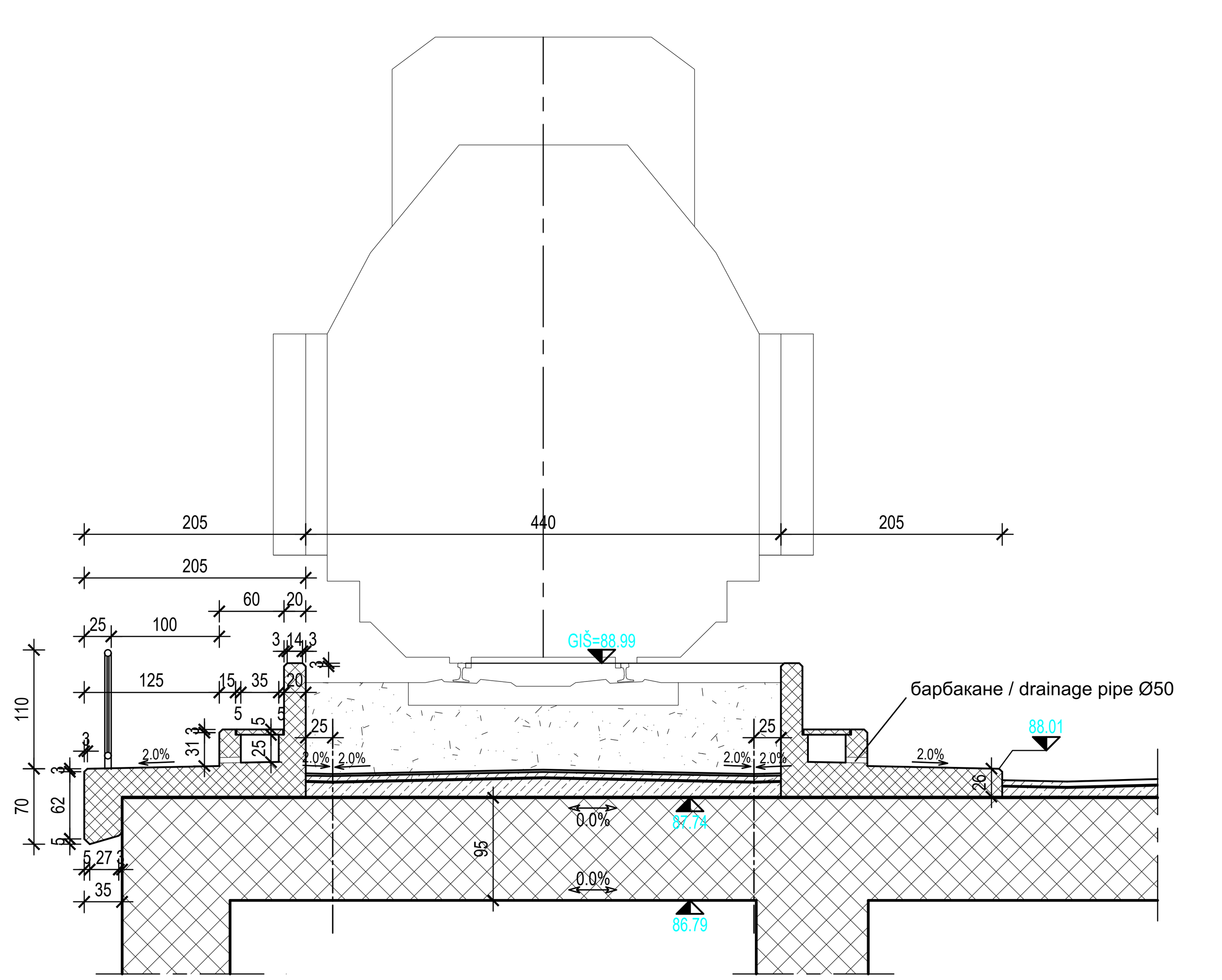
ПОПРЕЧНИ ПРЕСЕК 2-2
CROSS SECTION 2-2

P/S 1:100



ДЕТАЉ А
DETAIL A

P/S 1:50



КАРАКТЕРИСТИКЕ МАТЕРИЈАЛА
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Подложни бетон Plain concrete	C 12/15		
Temelj i obloga kegle Slope lining foundation and plates	C 20/25		

Број/Number	Датум / Date	Опис / Description
03		
02		
01		

Ревизиони блок: / Revision block:

China Railway Design Corporation Serbia
Ogranak Beograd
Косте Рацина 16б; 11000 Београд; Србија

Организациона јединица: ГРАЂЕВИНАРСТВО И САОБРАЋАЈ
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Зоран Луковић, дипл.грађ.инж
лиценца број:/ license No.: 310 3032 03

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Сарадници: / Associates:

Објекат: /Structure:
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ДЕОНИЦА ПРУГЕ НОВИ САД - СУБОТИЦА - ДРЖАВНА ГРАНИЦА (КЕЛЕБИЈА)
BELGRADE - SUBOTICA - STATE BORDER (KELEBIA) RAILWAY LINE
SECTION : NOVI SAD - SUBOTICA - STATE BORDER (KELEBIA)

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ПРОЈЕКАТ КОНСТРУКЦИЈА / DESIGN OF CONSTRUCTION

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2/1.1.3.1 Gallery design at km 78+377.03

Унутрашња контрола: / Internal control:
Hou Jieping. Master & Shi Wei. Bachelor

Главни пројектант: / Chief designer:
др Љиљана Милић Марковић, дипл.грађ.инж.

Руководилац организационе јединице:
Manager of organization unit:
др Љиљана Милић Марковић, дипл.грађ.инж.

Цртеж: / Drawing: ПОПРЕЧНИ ПРЕСЕЦИ / CROSS SECTIONS

Размера: / Scale: 1:100, 1:50

Врста тех. док.: / Type of tech. docum.: ПГД / DCP
датум:/date: 04.2021.
Цртеж бр./Drawing No.: 2020-001-ГС-2/1.1.3.1.7.Ц06.